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Central Region
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SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAM
1982 Sampling Results for Lakes in the Central Region of the Ministry of the Environment

ISSN 0715-0261

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SECCHI DISC-CHLOROPHYLL a SELF-HELP PROGRAM Cont'd

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76) Tasso Lake, Finlayson Ward, Twp. of Lake of Bays, Muskoka
77) Twelve Mile Lake, Minden Twp., Haliburton
78) Waseosa Lake, Chaffey Ward, Town of Huntsville, Muskoka
79) Wood Lake, Oakley Ward, Town of Bracebridge, Muskoka
80) Sturgeon Lake, Fenelon Township, Victoria County

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SECCHI DISC - CHLOROPHYLL a SELF-HELP PROGRAMME - 1982

The "Self-Help Programme" was initiated in 1971 in response to many reque ts from concerned cottagers for water quality surveys on many recreational lakes throughout the Province. In the Self-Help Programme, cottagers perform the sample collection on their lakes and the Ministry analyzes and interprets the water quality information.

Volunteers in the Self-Help Programme are supplied with sampling kits which include a Secchi disc, a water sampler, sample bottles and instructions. Participants are asked to take Secchi disc readings and collect water samples bi-weekly during the ice-free period of the year. The water samples are then shipped to the nearest Ministry of the Environment laboratory where they are analyzed for chlorophyll a. The true value of this program will only be realized if it is continued for a number of years in order to define long-term trends with regard to variations in the enrichment status of the lakes.

Enrichment of lakes occurs when fertilizing nutrients, such as nitrogen and phosphorus, enter the lake via rainfall, runoff from land, and shoreline development activities (i.e. subsurface disosal systems, land clearing, etc.). These nutrients promote the growth of aquatic plants and algae. It is important to realize that samll to moderate amounts of aquatic plans and algae are necessary to provide food for aquatic, invertebrate organisms which serve, in turn, as food for fish. Too much growth, however, may interfere with water-oriented, recreational activities.

Previous experience has indicated that there are three general categories of lake enrichment. All three categories exist in nature, however, man's activities can alter a lake's enrichment status. The transparency of the water as indicated by Secchi disc readings and the density of suspended microscopic, aquatic plants called algae, as indicated by chlorophyll a concentrations are measurements that are used to determine the enrichment status of a lake. The following table shows how these two measurements are interpreted to determine the enrichment status of a lake.

Enrichment Status	Secchi Disc (S.D.) (Meters - m)	Chlorophyll a Concentrations (Chl. a) (micrograms/litre - ug/L)
Enriched	0-3 m	4 ug/L or greater
Moderately Enriched	3-5 m	2-4 ug/L
Unenriched	5 m or greater	0-2 ug/L

Enriched Lakes

These lakes have high concentrations of nutrients and are characterized by excessive growths of algae and aquatic weeds. This may interfere with water-oriented, recreational activities. As a result of the large amount of algae suspended in the water, Secchi disc readings are generally less than 3 metres and chlorophyll a concentrations are 4 ug/L or greater.

Moderately Enriched Lakes

These lakes have moderate concentrations of nutrients and are characterized by moderate growth of algae and aquatic weeds. They are suitable for the pursuit of water-oriented, recreational activities, however, they may develop periodic problems such as algae blooms. Secchi disc readings range from 3 to 5 metres and chlorophyll a concentrations range from 2 to 4 ug/L.

Unenriched Lakes

These lakes are the most desirable from a recreational standpoint. If these lakes are deep, they may support a cold water fishery such as lake trout. These are usually clear-water lakes, with low concentrations of nutrients. Secchi disc readings are 5 metres or greater and chlorophyll a concentrations are less than 2 ug/L.

DS:cra:F1-F

Allen Lake

Dudley & Harcourt Twp.

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Allen Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 6	6.25	AD
June 20	7.0	1.2
June 27	6.75	1.3
July 4	6.25	1.5
July 26	5.0	2.2
Aug. 8	5.5	2.0
Sept. 6	5.5	1.2
	6.0	1.6

In 1982, the Secchi disc readings ranged from 5.5 to 7.0 m and chlorophyll a concentrations ranged from 1.2 to 2.2 ug/L. Based on the seasonal averages, Allen Lake would be considered unenriched characterized by a high degree of water transparency and low densities of suspended algae.

AD - anomalous data withdrawn at lab

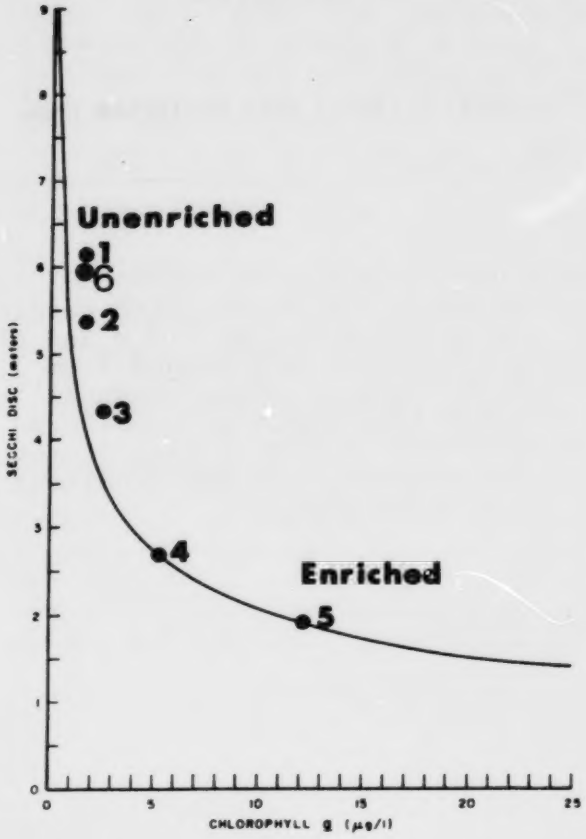
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Allen Lake from 1973 to 1982

Station	Main		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973	4.7**	1.3**		
1974	4.9	1.2		
1975	5.6	1.8		
1976	5.3	1.8		
1977	5.6	- -	5.3*	
1978	5.3	1.6		
1979	5.2	1.8		
1980	5.3	2.1		
1981	5.9	1.5		
1982	6.0	1.6		

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Allen Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Allen Lake - 1982

Allen Lake has been sampled for 10 years and in that time, there have not been any major changes in water quality. Water quality continues to be excellent for recreational use. We wish to congratulate the cottagers for conducting an excellent sampling program and we hope their participation continues in 1983.

For additional copies of this report, please contact:

Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Balsam Lake

Bexley Township

Victoria County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Balsam Lake in 1982

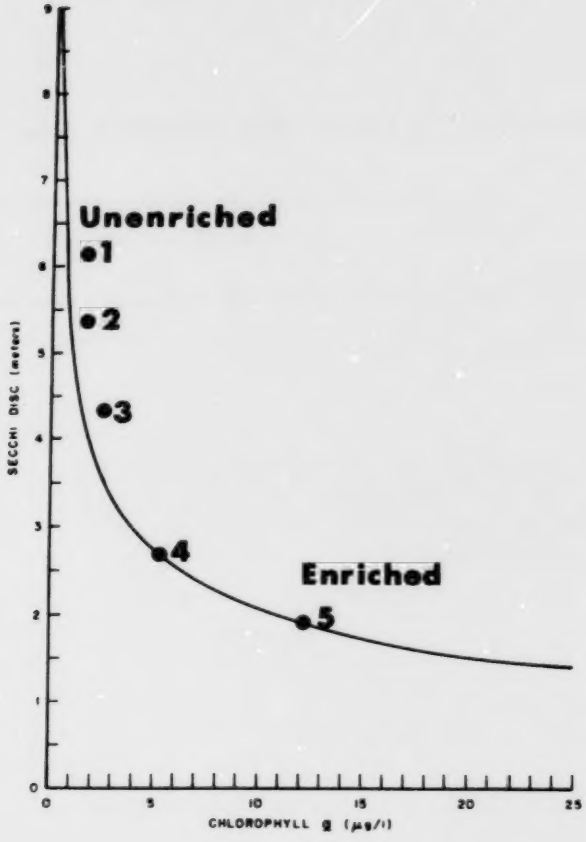
Station	Driftwood Bay Village	
Date	S.D.	Chl.a
June 20	4.0	1.2 (?)

Insufficient samples were collected to allow meaningful conclusions to be made. It is recommended that at least six samples be taken throughout the ice-free period in order to get a reliable seasonal mean.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from

Station	
Year	
1971	
1972	
1973	
1974	
1975	
1976	
1977	
1978	
1979	
1980	

Figure 1: The relationship between Secchi disc and chlorophyll a for Balsam Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6.

If participation in the sampling program is to be continued the sampling frequency must be increased.

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Bass Lake

Medora Ward

Township of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Bass Lake in 1982

Station	Center Bay	
Date	S.D.	Chl.a
Aug. 1	4.5	1.9
Aug. 12	3.0	0.8
Aug. 15	4.0	0.9
Aug. 29	4.0	1.2
Sept. 6	3.5	0.9
Sept.12	3.5	1.7
	3.8	1.2

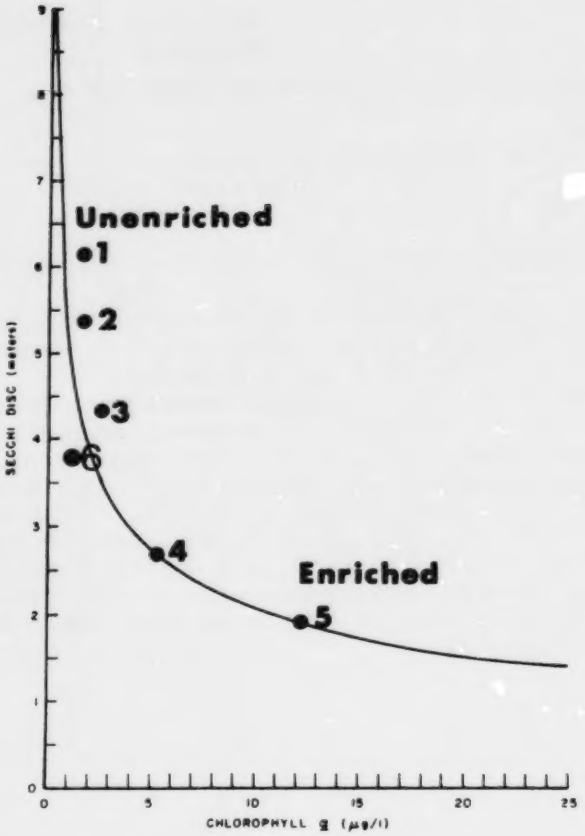
In 1982, Secchi disc readings ranged from 3.0 to 4.5 m and chlorophyll a concentrations ranged from 0.8 to 1.9 ug/L. Based on the seasonal averages, Bass Lake would be considered between unenriched and moderately enriched. The degree of water transparency was moderately high and densities of suspended algae were low. It should be noted that the chlorophyll sample results from Aug. 12 and 15 and Sept. 6 and 12 may not be reliable since they were greater than 48 hours old by the time they were submitted to the lab.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Bass Lake in 1981 and 1982

Station	Center Bay		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972			3.9*	4.1*
1973				
1974				
1975				
1976				
1977				
1978				
1979				
1980				
1981	4.6	3.0		
1982	3.8	1.2		

* MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Bass Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Bass Lake - 1982

Since the MOE survey was conducted on Bass Lake in 1972, the average Secchi disc readings have not changed considerably, however, the average chlorophyll a concentrations have decreased from 4.1 ug/L in 1972 to 1.2 ug/L in 1982.

We hope that participation in this programme continues so that we can monitor any long-term changes in water quality.

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Bass Lake

Orillia & Oro Townships

Simcoe County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Bass Lake in 1982

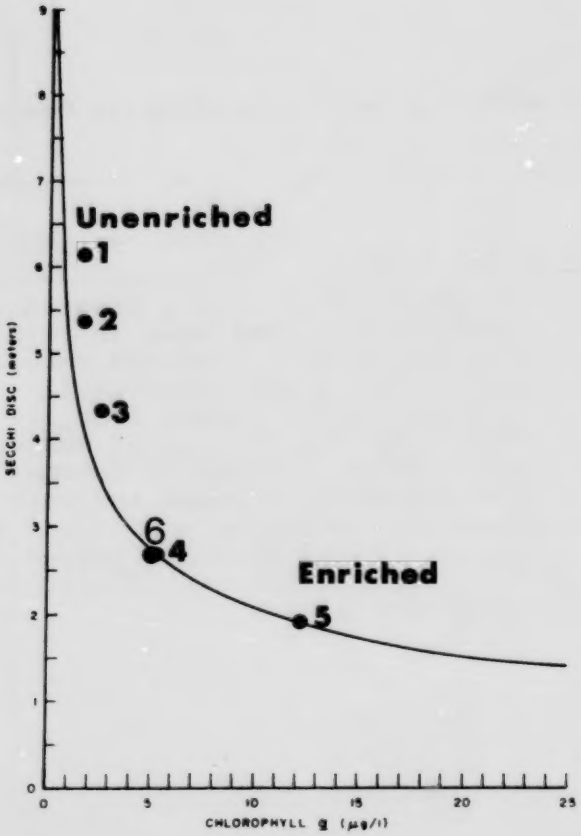
Station	Main		
Date	S.D.	Chl.a	
May 16	3.0	3.0	An excellent sampling program was conducted on Bass Lake in 1982. The Secchi disc readings ranged from 1.8 to 3.5 m and chlorophyll a concentrations ranged from 1.2 to 12.5 ug/L. High densities of suspended algae were observed in October 1982. The seasonal averages indicate that Bass Lake would be considered enriched, characterized by a low degree of water transparency and high densities of suspended algae.
June 29	3.5	4.2	
July 5	2.4	3.9	
July 15	1.8	3.4	
July 26	1.8	4.2	
Aug. 12	2.7	5.9	
Aug. 23	2.4	5.5	
Sept. 7	2.4	4.8	
Sept.18	3.5	1.2	
Oct. 4	3.0	9.1	
Oct. 12	3.0	12.5	
	2.7	5.2	

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Bass Lake from 1973 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973	2.2	2.6
1974	2.0(1.6*)	2.4(6.4*)
1975	1.9	6.5
1976	2.0	4.8
1977	2.1	- -
1978	1.8	6.7
1979	2.3	6.1
1980	3.5	4.6
1981	3.6	2.9
1982	2.7	5.2

* MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Bass Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Bass Lake - 1982

An excellent sampling programme has been conducted on Bass Lake since 1973. During the period of record average Secchi disc readings have ranged from 1.8 m in 1978 to 3.6 m in 1981. The average chlorophyll a concentrations have ranged from 2.4 ug/L in 1974 to 6.7 ug/L in 1978. Bass Lake experiences periodic algae blooms depending on the occurrence of ideal nutrient and weather conditions. This results in large fluctuations in annual average chlorophyll a concentrations.

We hope that participation in this programme continues in 1983.

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Bat Lake

Minden Township

Provisional County of Haliburton

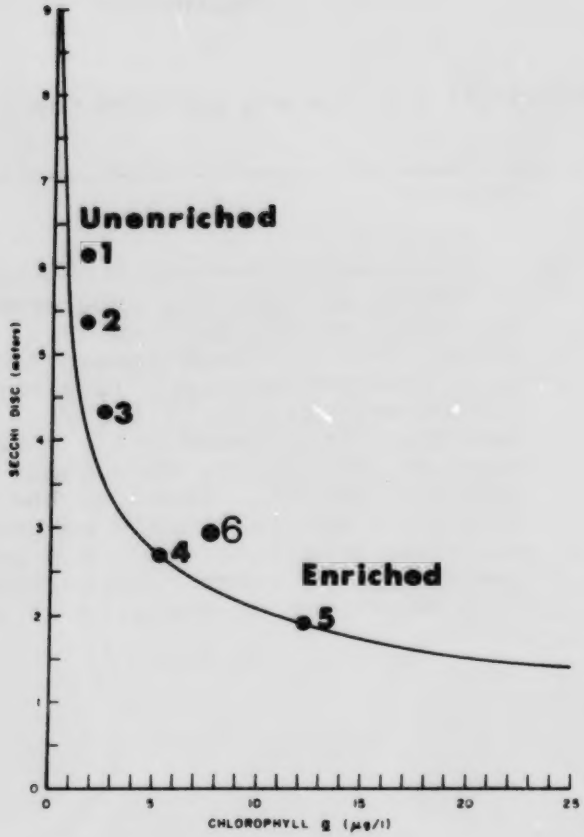
TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Bat Lake in 1982

Station	Middle		
Date	S.D.	Chl.a	
May 13	3.25	6.3	An excellent sampling programme was conducted on Bat Lake in 1982. The Secchi disc readings ranged from 2.5 to 3.75 m and chlorophyll a concentrations ranged from 3.4 to 12.8 ug/L. High densities of suspended algae were observed frequently throughout the sampling period. Based on the seasonal averages, Bat Lake would be considered enriched, characterized by a moderately low degree of water transparency and high densities of suspended algae.
June 27	2.50	10.2	
July 4	2.75	9.1	
July 11	2.50	4.8	
July 18	3.00	10.0	
Aug. 1	3.25	7.7	
Aug. 15	3.75	12.8	
Aug. 22	3.00	3.4	
Aug. 29	3.00	5.0	
	3.0	7.7	

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Bat Lake in 1981 and 1982

Station	1. Middle	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978		
1979		
1980		
1981	2.5	5.5
1982	3.0	7.7

Figure 1: The relationship between Secchi disc and chlorophyll a for Bat Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Bat Lake - 1982

There has been no significant change in water quality in Bat Lake since 1981. There will be considerable fluctuation in average chlorophyll a concentrations from year to year due to the lake's enrichment status and the occurrence of algae blooms.

We hope that participation in this programme continues so that we can establigh a long-term record of water quality.

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Beech Lake

Stanhope Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Beech Lake in 1982

Station	Centre	
Date	S.D.	Chl.a
June 27	4.50	4.1
July 4	4.75	3.3
July 18	4.00	1.3
Aug. 10	4.50	6.9
Aug. 24	4.20	2.5
	4.4	3.6

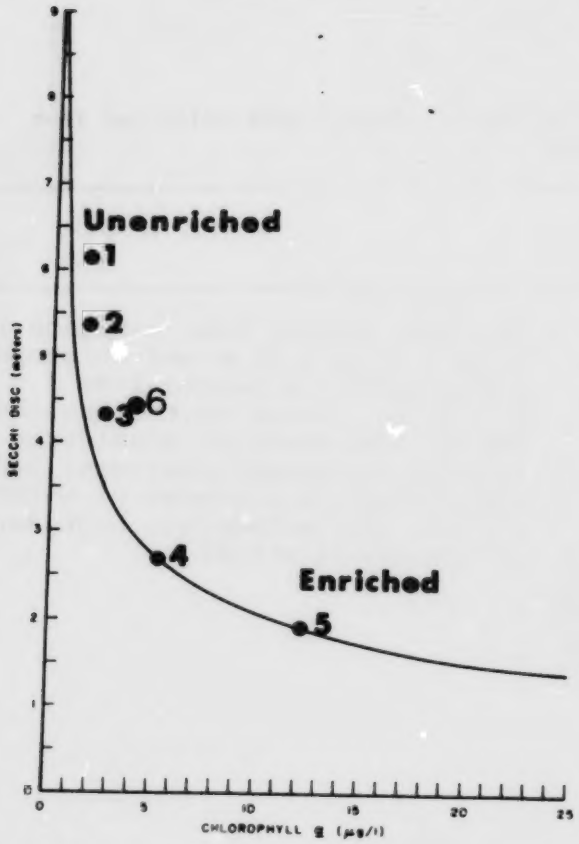
In 1982, Secchi disc readings ranged from 4.0 to 4.75 m and chlorophyll a concentrations ranged from 1.3 to 6.9 ug/L. Based on the seasonal averages, Beech Lake would be considered moderately enriched, characterized by a moderately high degree of water transparency and moderately high densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Beech Lake from 1976 to 1982

Station	1	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976	5.3	1.9
1977	5.3*	- -
1978	4.8*	1.5*
1979	5.0*	1.9*
1980	- -	- -
1981	4.5*	3.2*
1982	4.4*	3.6*

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Beech Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Beech Lake - 1982

Since 1976, there has been a gradual decrease in average Secchi disc readings from 5.6 m in 1976 to 4.4 m in 1982. The average chlorophyll a concentrations have increased slightly from 1.5 ug/L in 1978 to 3.6 ug/L in 1982. This may indicate a change in water quality, however, we recommend that participation in this programme be continued to confirm this.

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Belmont Lake

Belmont & Methuen Twp.

Peterborough County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Belmont Lake in 1982

Station	Near entrance to Crowe Lake	
Date	S.D.	Chl.a
June 14	4.50	0.9
June 21	4.75	1.3
June 28	4.00	2.3
July 6	4.00	2.2
July 19	5.5	0.4
July 28	6.5	0.3
Aug. 5	6.0	0.7
Aug. 9	5.0	1.0
Aug. 15	5.5	1.3
Aug. 23	4.5	1.5
Aug. 28	5.0	1.2
Sept. 7	4.5	1.2
	5.0	1.2

Another excellent sampling program was carried out during 1982. The July 28 sampling indicates the highest water clarity ever measured on Belmont Lake. The close correspondence between clarity and algal density over the sampling period has been very consistent over the past 9 years of self-help record. The lake continues to be characterized as unenriched with a low algal density and a moderately high degree of water transparency.

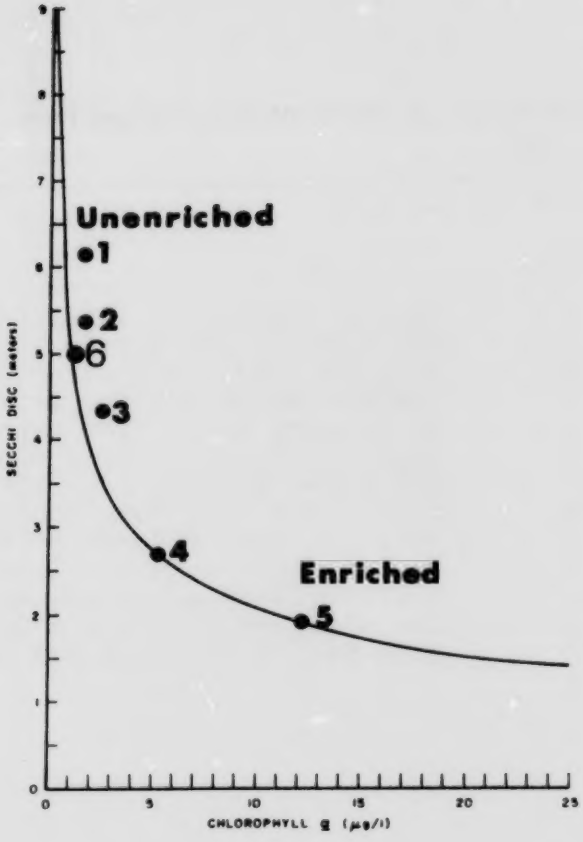
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Belmont Lake from 1972 to 1982

Station			
Year		S.D.	Chl.a
1971			
1972	*	3.7	1.3
1973		- -	- -
1974		4.3	1.2
1975		4.0	2.2
1976		4.1	1.8
1977		5.3	- -
1978		4.8	1.6
1978	**	4.1	2.0
1979		4.7	1.6
1980		- -	- -
1981		4.6	1.0
1982		5.0	1.2

* MOE Recreational Lakes Survey

** Mean values from MOE/7 Links Water Quality Survey 1978

Figure 1: The relationship between Secchi disc and chlorophyll a for Belmont Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Belmont Lake - 1982

It appears from Table 2 that Belmont Lake has a relatively stable enrichment status from year to year over the period of record. Continued participation in the sampling program is recommended.

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Big Barnham Lake

Dudley Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Big Barnham Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 27	3.5	1.9
July 4	3.5	1.3
Aug. 15	5.5	2.0
Aug. 22	5.5	1.4
Aug. 29	5.5	1.5
	4.7	1.6

In 1982 the Secchi disc readings ranged from 3.5 m to 5.5 m and average chlorophyll a concentrations ranged from 1.3 to 2.0 ug/L.

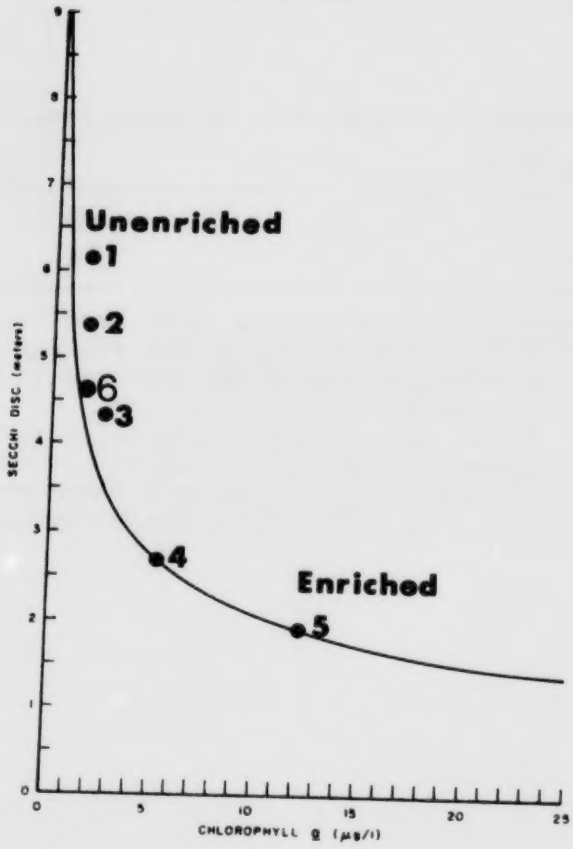
Based on the moderately high degree of water transparency and the low densities of suspended algae, Big Barnham Lake would be considered unenriched.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Big Barnham Lake from 1975 to 1982.

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975	5.5	1.6
1976	4.7	4.0
1977	6.0	- -
1978	5.9	1.4
1979	5.6	2.0
1980	4.8	1.6
1981	4.8	3.4
1982	4.7*	1.6*

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Big Barnham Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Big Barnham Lake - 1982

An excellent sampling program has been conducted on Big Barnham Lake since 1975. The results of this program indicate that the average Secchi disc readings have ranged from a high of 6 m in 1977 to a low of 4.7 m in 1976, the average chlorophyll a concentrations were high in 1976 and 1981 but low at other times. In general, there has been no overall change in water quality since 1975 in Big Barnham Lake. Water quality remains very good for recreational use. We hope that participation in this programme continues in 1983.

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Big Straggle Lake

Harcourt Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Big Straggle Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 28	3.5	3.4
July 4	3.5	3.6
July 18	3.8	2.0
Aug. 8	3.6	2.7
	3.6	2.9

In 1982, the Secchi disc readings ranged from 3.5 to 3.8 m and chlorophyll a concentrations ranged from 2.0 to 3.6 ug/L. This indicates that the degree of water transparency was moderately low and densities of suspended algae were moderately high. Big Straggle Lake would be considered moderately enriched based on this information.

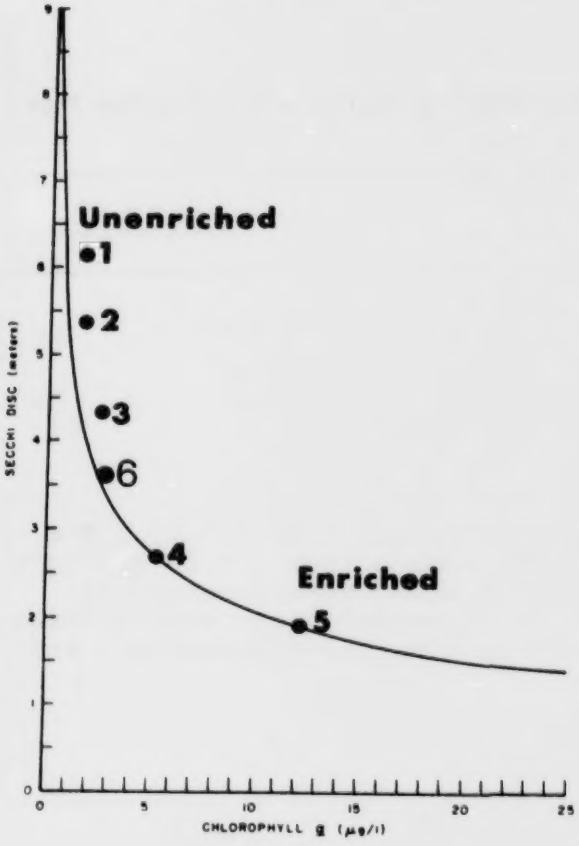
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Big Straggle Lake from 1971 to I982

Station	Main		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a
1971	3.8	2.1		
1972	-	-		
1973	4.6	4.0		
1974	4.8	1.4		
1975	6.0	1.7		
1976	4.5	1.8		
1977	5.7	-	4.7*	- -
1978	5.4	2.2		
1979	4.6	3.1		
1980	5.0	3.0		
1981	5.9	3.2		
1982	3.6**	2.9**		

* MOE Data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Big Straggle Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Big Straggle Lake - 1982

In 1982, the average Secchi disc reading was the lowest since sampling commenced in 1971, however, this was not accompanied by an increase in the average chlorophyll a concentration. The reason for the decline in water transparency in 1982 is not apparent from the information available, however, it is probably a temporary condition as observed in 1971. Since 1974, average chlorophyll a concentrations have increased slightly from 1.4 to 3.2 ug/L in 1981. We hope that participation in this programme continues in 1983.

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Birch Bark Lake
(Trounce)

Galway Township

Peterborough County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Birch Bark Lake in 1982

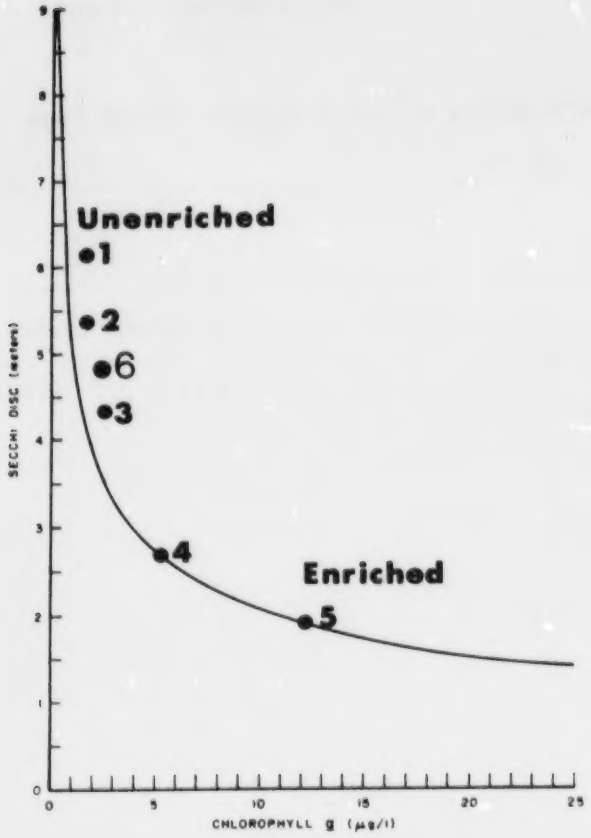
Station	1	
Date	S.D.	Chl.a
July 4	4.7	2.0
July 12	4.8	2.4
July 18	4.8	2.5
Aug. 15	4.8	4.0
Sept. 5	5.2	1.8
	4.8	2.5

Birch Bark Lake was considered moderately enriched with moderately low algal densities and a relatively high degree of water transparency.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Birch Bark Lake from 1977 to 1982

Station	1	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977	4.8	- -
1978	5.3	1.8
1979	5.3	1.9
1980	- -	- -
1981	5.0	2.6
1982	4.8	2.5

Figure 1: The relationship between Secchi disc and chlorophyll a for Birch Bark Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Birch Bark Lake - 1982

Although the results shown in Table 2 for the last two years appear similar the long term trend in the enrichment status of the lake is not clear. Only with continued participation in the sampling program will any trends in enrichment status be defined.

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Black Lake

Wood Ward

Township of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Black Lake in 1982

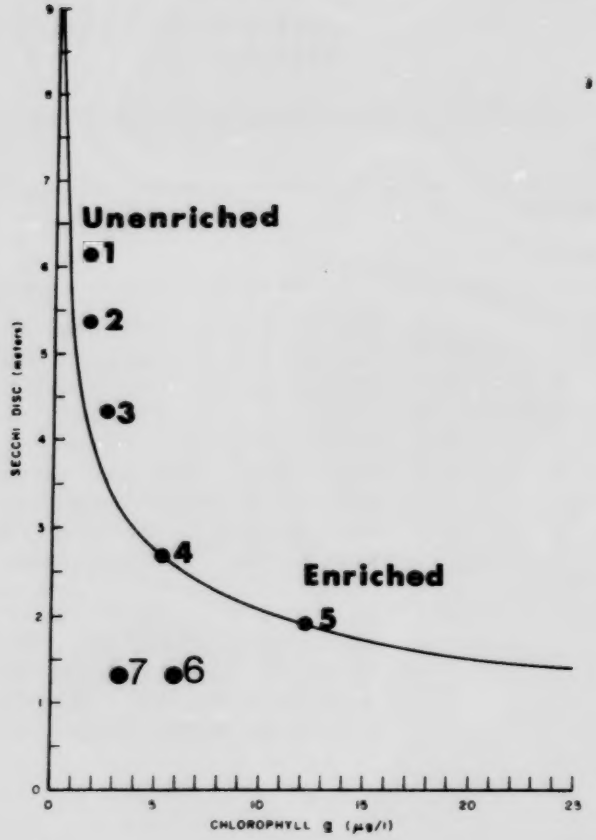
Station	South		North		
Date	S.D.	Chl.a	S.D.	Chl.a	
July 4	1.2	1.7	1.3	1.9	The Secchi disc readings were relatively constant during the sampling period ranging from 1.1 to 1.6 ug/L both at the South station and at the North station. The low degree of water transparency is due to the natural brown colour of the water and the suspended algae. Chlorophyll a concentrations reached a peak of 21.4 ug/L at the south station. This indicates that an algae bloom occurred around Aug. 15. Black Lake would be considered enriched.
11	1.1	7.0	1.1	2.5	
18	1.2	3.3	1.3	3.3	
25	1.6	2.9	1.6	5.4	
Aug. 2	1.4	4.2	1.4	3.3	
8	1.2	4.2	1.2	3.9	
15	1.2	21.4	- -	- -	
29	1.3	3.9	1.3	3.4	
Sept. 6	1.3	2.6	1.4	2.4	
	1.3	5.7	1.3	3.3	

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Black Lake from 1975 to 1982

Station	Main		South		North	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972						
1973						
1974						
1975	1.8*	3.8*	1.8*	4.1*	1.8	4.1
1976						
1977						
1978						
1979			1.3	8.4	1.3	9.0
1980			1.2	6.8	1.2	5.8
1981			1.4	9.7	1.2	6.0
1982			1.3	5.7	1.3	3.3

*Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Black Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Black Lake - 1982 South
7. North - 1982

The degree of water transparency of Black Lake has remained relatively constant since 1975 and average chlorophyll a concentrations were lower in 1982 than in previous years. The shallow nature of Black Lake (maximum depth 3.4 m) results in constant mixing of the lake during the summer due to wind and wave action, resulting in the release of nutrients from the sediments into the lake. This constant mixing process is the probable cause of the algae blooms which Black Lake often experiences.

We hope that participation in the Self Help Programme continues next year.

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Boshkung Lake

Stanhope Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Boshkung Lkae in 1982

Station Date	S.D.	Chl.a
May 13	4.5	13.5
June 21	5.0	3.0
July 20	5.0	1.1
Aug. 8	5.0	2.9
Aug. 24	4.5	3.3
	4.8	4.8

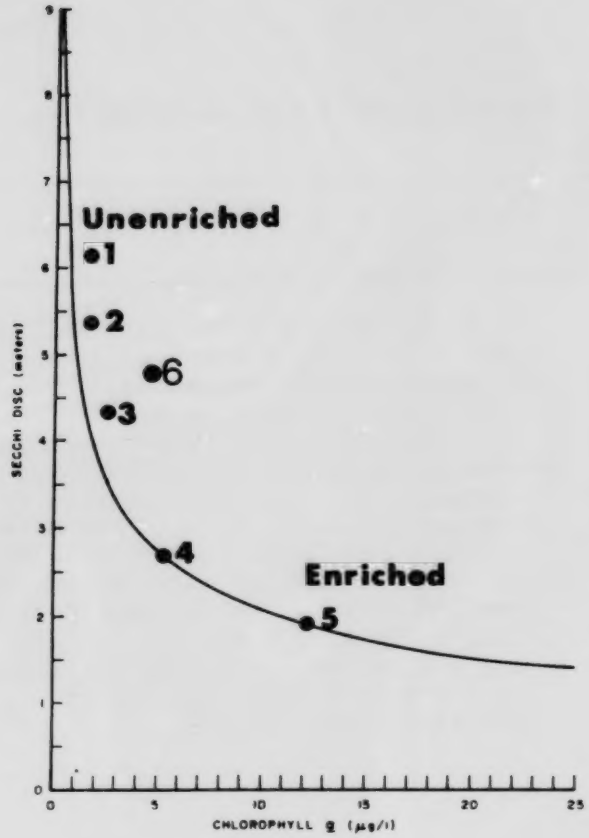
In 1982, the Secchi discreadings ranged from 4.5 to 5.0 m and chlorophyll a concentrations ranged from 1.1 ug/L in July to 13.5 ug/L in May. High densities of suspended algae were present in May increasing the seasonal average chlorophyll a concentration. This algae bloom appears to have resulted from unusually high concentrations of nutrients entering the lake via the Gull and Kennisis Rivers in April and May of 1982. This was supported by water quality data collected on the Gull River above Boshkung Lake in 1982.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Boshkung Lake from 1972 to 1982

Station Year	Main S.D.	Chl.a
1971		
1972	5.6	0.9
1973	5.6*	2.0*
1974	- -	0.9
1975	5.2*	1.4
1976	- -	- -
1977	6.6	- -
1978	- -	- -
1979	5.4	1.6
1980	4.6	2.3
1981	5.8*	2.1*
1982	4.8*	4.8*

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Boshkung Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Boshkung Lake - 1982

There is now 8 years of data available on Boshkung Lake which indicates that water quality of the lake has remained relatively constant until 1982. The high densities of suspended algae observed in May, 1982 were unusual and may not recur for many years, however, we recommend that participation in this programme be continued next year to monitor chlorophyll a concentrations.

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Bruce Lake

Medora Ward

Township of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Bruce Lake in 1982

Station	Centre	
Date	S.D.	Chl.a
June 12	3.0	12.4
June 20	3.0	6.3
July 3	3.75	2.1
July 20	4.0	2.1
Aug. 1	3.75	2.5
Aug. 15	3.0	2.2
Aug. 29	3.0	2.9
Sept.12	2.6	5.8
	3.3	4.5

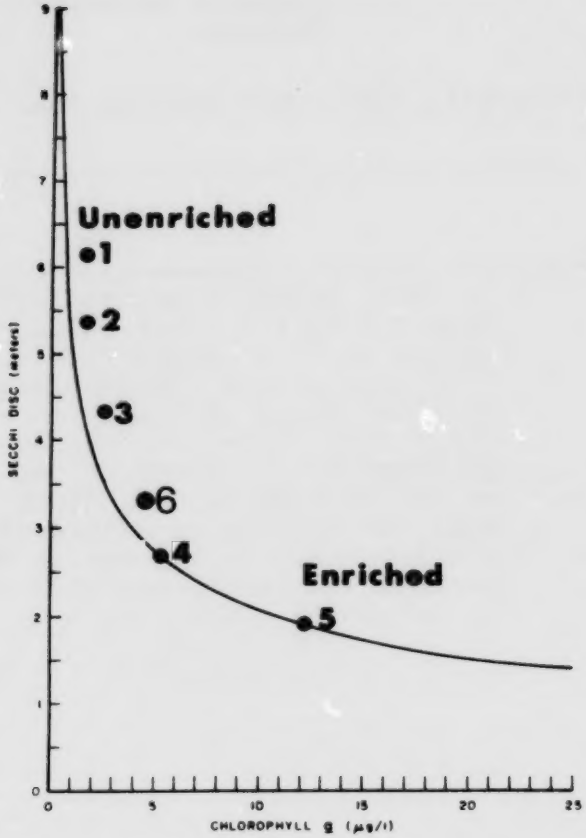
In 1982, Secchi disc readings ranged from 2.6 to 4.0 m and chlorophyll a concentrations ranged from 2.1 to 12.4 ug/L during the sampling period. An algae bloom was experienced in early June increasing the average chlorophyll a concentration. Based on the average values, Bruce Lake would be considered moderately enriched, characterized by a moderate degree of water transparency and high densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Bruce Lake from 1977 to 1982

Station	A	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974	3.4*	3.6*
1975	- -	- -
1976	- -	- -
1977	1.8*	- -
1978	3.6*	4.8*
1979	3.9	5.2
1980	3.8	4.8
1981	3.1	2.0*
1982	3.3	4.5

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Bruce Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Bruce Lake - 1982

Since 1974, the water quality of Bruce Lake has remained relatively constant. It is characterized by an abundance of suspended algae. Because of the lake's shallow nature (maximum depth 6 m), wind and wave action create a constant mixing of the lake throughout the summer. Nutrients in the sediments of the lake are released into the water. This, combined with the sunlight which penetrates to the bottom of the lake provide ideal conditions for algae growth.

We congratulate the cottagers for their enthusiastic participation in this programme.

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Cameron Lake

Fenelon Township

Victoria County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Cameron Lake in 1982

Station	Fell's Bay	
Date	S.D.	Chl.a
June 27	2.54	- -
Aug. 15	- -	1.3
	2.54	1.3

Insufficient samples were taken to allow meaningful conclusions to be made. It is recommended that at least six samples be taken throughout the ice free period in order to get a reliable seasonal mean.

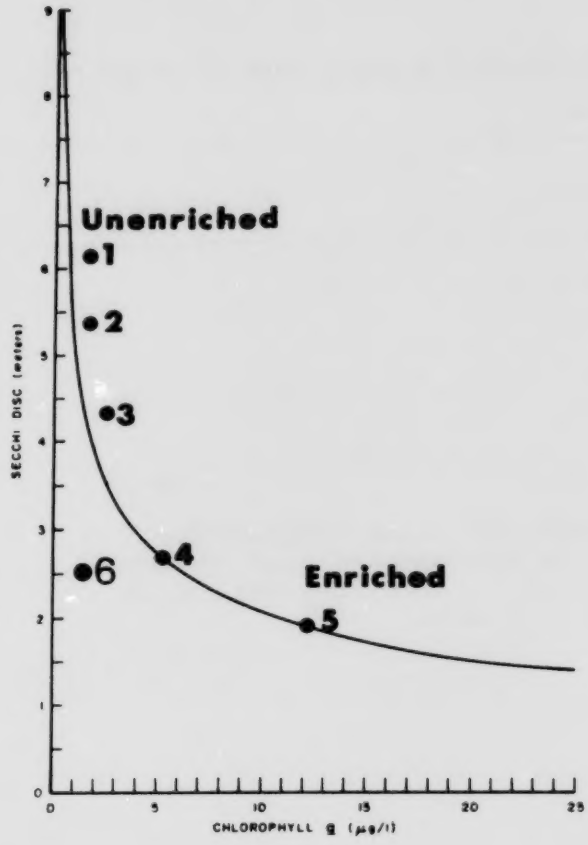
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Cameron Lake from 1971 to 1982

Station	Fell's Bay	
Year	S.D.	Chl.a
1971 *	3.9	2.8
1972 *	3.8	2.8
1973 *	5.0	2.6
1974		
1975		
1976 *	3.7	1.9
1977		
1978		
1979		
1980		
1981	4.4**	1.6**
1982	2.54**	1.3**

* MOE sampling at mid-lake

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Cameron Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Cameron Lake - 1982

If participation in this program is to be continued, the sampling frequency must be increased.

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Canning Lake

Minden & Snowdon Twps.

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Canning Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 6	3.5	1.9
June 20	3.5	4.3
June 28	4.0	2.6
July 5	4.0	3.0
July 19	4.5	AD
July 26	4.5	1.9
Aug. 15	5.5	0.8
Aug. 22	4.5	1.8
Aug. 29	5.5	1.4
	4.4	2.2

In 1982, Secchi disc readings ranged from 3.5 to 5.5 m and chlorophyll a concentrations ranged from 0.8 to 4.3 ug/L. Based on the seasonal averages, Canning Lake would be considered moderately enriched, characterized by a moderately high degree of water transparency and moderately low densities of suspended algae.

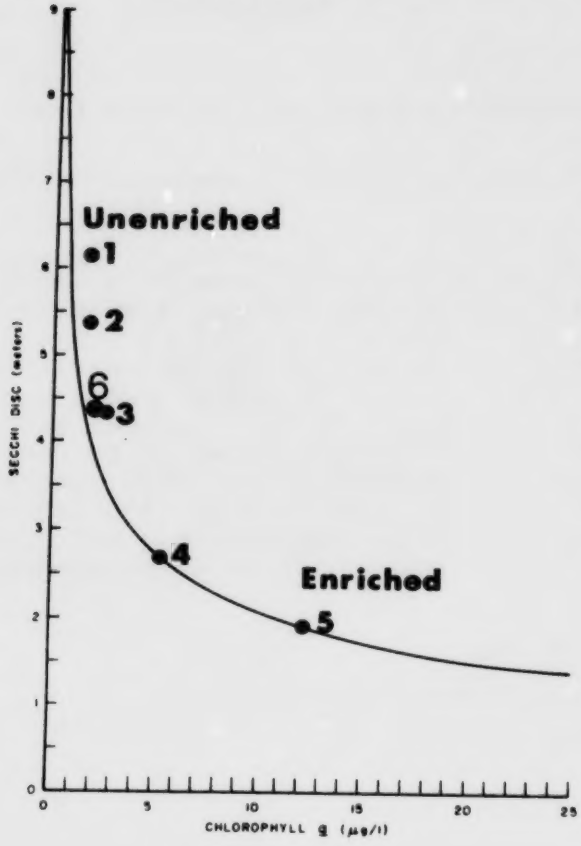
AD anomalous data withdrawn at lab.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Canning Lake from 1972 to 1982.

Station	Main		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972	4.6	3.0		
1973	5.6	1.8		
1974	4.8	1.6		
1975	4.9	1.6		
1976	5.6	1.9	5.4*	2.0*
1977	5.5	- -		
1978	4.4	2.3		
1979	4.3	2.4		
1980	3.8	2.3		
1981	4.2	2.9		
1982	4.4	2.2		

* MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Canning Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Canning Lake - 1982

Canning Lake has been sampled for 11 years and during this period, there have been no noticeable changes in water transparency or suspended algae.

Water quality remains good for recreational use. We hope that participation in this programme continues in 1983.

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Chandos Lake

Chandos Township

Peterborough County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Chandos Lake in 1982

Station	West Bay		Tanners Bay	
Date	S.D.	Chl.a	S.D.	Chl.a
July 6	12.6	1.7	12.6	1.2

Insufficient samples were taken during the program to allow meaningful conclusions to be made. It is recommended that at least six samples at each station be taken throughout the ice-free period in order to get a reliable seasonal mean.

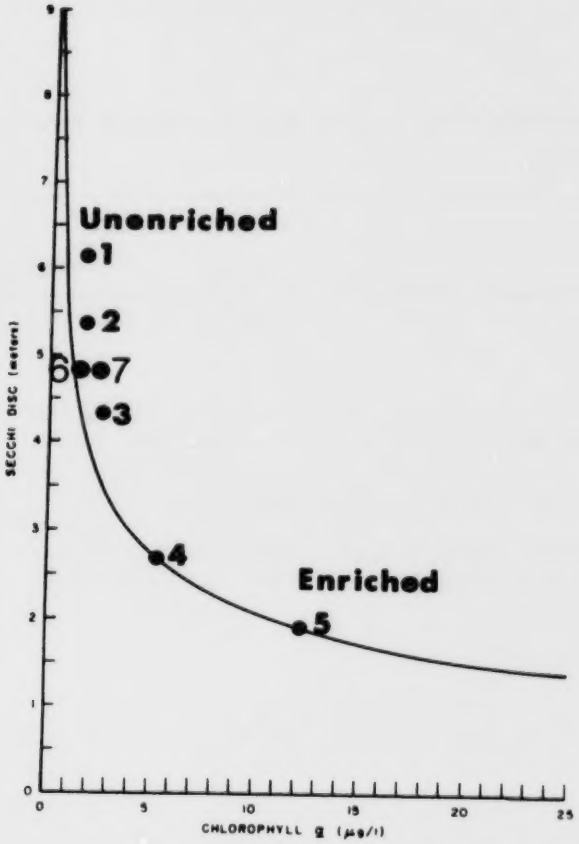
Fortunately, a joint MOE/Crowe Valley C.A. sampling program was ongoing through 1982 in Chandos Lake. The results are shown in Table 2.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Chandos Lake from 1972 to 1982

	Station	South Bay(1)		Gilmour Bay		North End		South End	
	Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
	1971								
*	1972	3.6	2.0						
**	1973	4.9	1.7						
*	1974	4.0	1.2						
T	1975	5.2	2.3						
	1976	4.0	2.2	3.3	5.2				
	1977	4.6	- -	4.4	- -				
	1978	4.1	2.6	4.1	4.4	4.1	2.6	4.3	2.7
	1979	- -	- -	3.0	3.9	- -	- -	3.5	2.2
	1980	- -	- -	3.4	4.8	- -	- -	3.5	2.5
	1981	- -	- -	4.0	3.0	- -	- -	4.5	2.0
	1982	4.8	1.6	4.8	2.3			4.8	1.6

* Mean of 4 stations ** Mean of 3 stations T Based on 1 set of data.

Figure 1: The relationship between Secchi disc and chlorophyll a for Chandos Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Chandos Lake - 1982
   MOE data
   South Bay
7. Gilmour Bay - 1982

Based on MOE data collected during 1982 Chandos Lake was considered unenriched with moderately low algal densities and a moderately high degree of water clarity.

Continued participation in the sampling program is encouraged with more frequent sampling to determine long term water quality trends in Chandos Lake.

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Clear Lake

Oakley Ward

Town of Bracebridge

D.M. of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Clear Lake in 1982

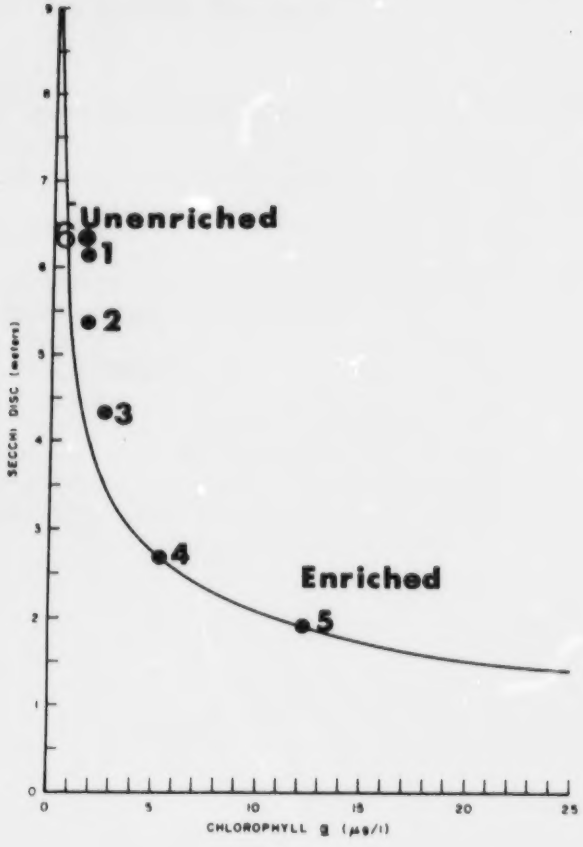
Station	Main	
Date	S.D.	Chl.a
May 9	5.5	1.3
May 24	6.0	1.4
June 6	6.0	2.2
July 5	6.0	1.6
July 18	6.2	1.1
Aug. 8	7.0	1.6
Sept.7	6.5	1.2
Sept.24	7.3	2.3
	6.3	1.6

In 1982, the Secchi disc readings ranged from 5.5 to 7.3 m and chlorophyll a concentrations ranged from 1.1 to 2.3 ug/L. Based on the seasonal averages, Clear Lake would be considered unenriched characterized by a high degree of water transparency and low densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Clear Lake from 1977 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977	7.1	- -
1978	6.6	1.5
1979	7.1	2.3
1980	6.8	2.0
1981	7.0	2.2
1982	6.3	1.6

Figure 1: The relationship between Secchi disc and chlorophyll a for Clear Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Clear Lake - 1982

Since 1977, the average Secchi disc readings have ranged from 6.3 to 7.1 m and average chlorophyll a concentrations have ranged from 1.5 to 2.3 ug/L. Water quality of Clear Lake is excellent and there has been no noticeable change in water quality since 1977.

We hope that participation in this programme continues in 1983.

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Clearwater Lake

Morrison Ward
Town of Gravenhurst

District Municipality of
Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Clearwater Lake in 1982

Station	Center	
Date	S.D.	Chl.a
June 13	5.1	2.0
June 20	5.8	5.6
June 27	5.6	5.1
July 4	6.6	2.9
Aug. 1	7.2	6.0
Aug. 8	6.8	3.2
Aug. 15	7.1	2.0
Aug. 22	6.1	1.2
	6.3	3.5

In 1982, the Secchi disc readings ranged from 5.1 to 7.2 m and chlorophyll a concentrations ranged from 1.2 to 6.0 ug/L

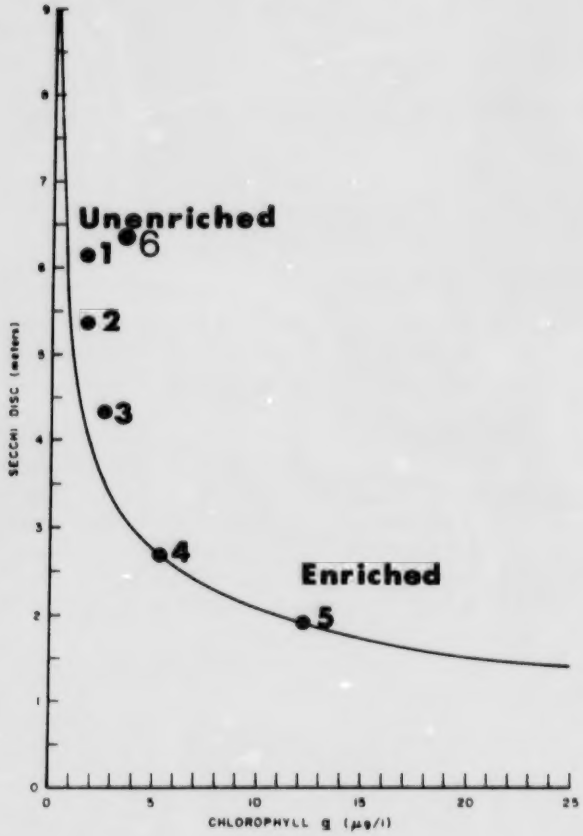
Based on the seasonal averages, Clearwater Lake would be considered moderately enriched. The high degree of water transparency combined with the moderately high densities of suspended algae indicate that the algae are located below the Secchi disc depth.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Clearwater Lake from 1975 to 1982

Station	1	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975	4.3	1.5
1976	5.4	1.8
1977	5.3	- -
1978	5.9*	2.5*
1979	5.5	3.4
1980	5.6	2.6
1981	5.4	3.0*
1982	6.3	3.5

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Clearwater Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Clearwater Lake - 1982

Since 1975, the average Secchi disc readings have ranged from 4.3 m in 1975 to 6.3 m in 1982. The average chlorophyll a concentrations have ranged from 1.5 ug/L in 1975 to 3.5 ug/L in 1982. The reason for this increase in water transparency accompanied by an increase in densities of suspended algae is not apparent.

We recommend that participation in this programme continue next year.

For additional copies of this report, please contact:

Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Crego Lake

Somerville Township

Victoria County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Crego Lake in 1982

Station	N. Center Lake		
Date	S.D.	Chl.a	
June 6	2.5	3.0	Minor fluctuation was noted over the sampling period in the results shown in Table 1. Based on the mean values of Secchi disc and chlorophyll a concentration Crego Lake was considered moderately enriched with moderate algal densities and a moderate degree of water clarity.
June 13	4.0	3.7	
July 5	3.5	2.8	
July 19	3.5	2.6	
July 26	3.5	3.3	
Aug. 9	3.0	6.0	
Aug. 15	4.0	4.2	
Sept. 7	3.5	4.7	
	3.4	3.8	

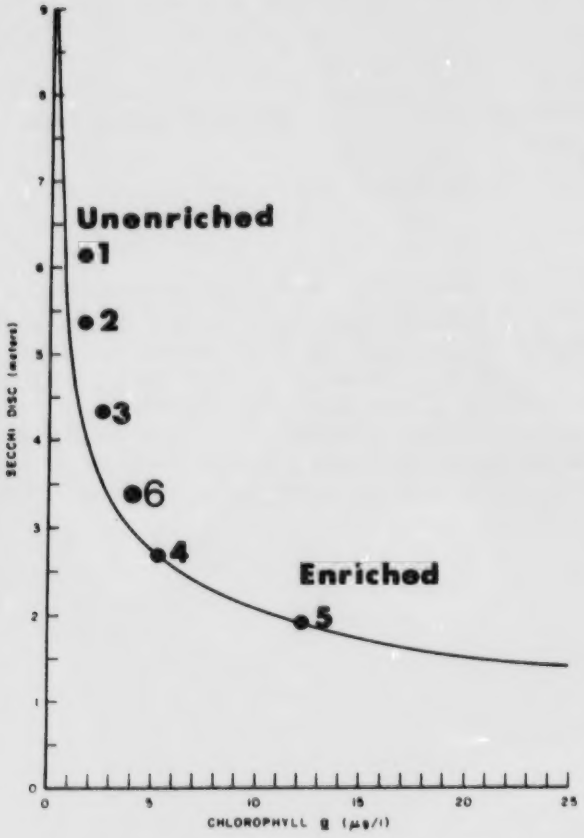
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Crego Lake from 1977 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977	4.0	- -
1978	4.3	3.7
1979	4.8	3.4
1980	3.8*	3.1**
1981	- -	- -
1982	3.4	3.8

* Based on 3 samples

** Based on 4 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Crego Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Crego Lake - 1982

Although little change in algal density over the period of record is evident, water transparency may be decreasing.

Continued participation at the 1982 sampling frequency is encouraged to make firm conclusions about long term trends in enrichment status.

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Crystal Lake

Galway Township

Peterborough County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Crystal Lake in 1982

Station	Point at L. Black Bay		N/W	
Date	S.D.	Chl.a	S.D.	Chl.a
July 4	4.0	1.4	5.0	2.6
Aug. 15	4.0	1.6	4.0	1.7

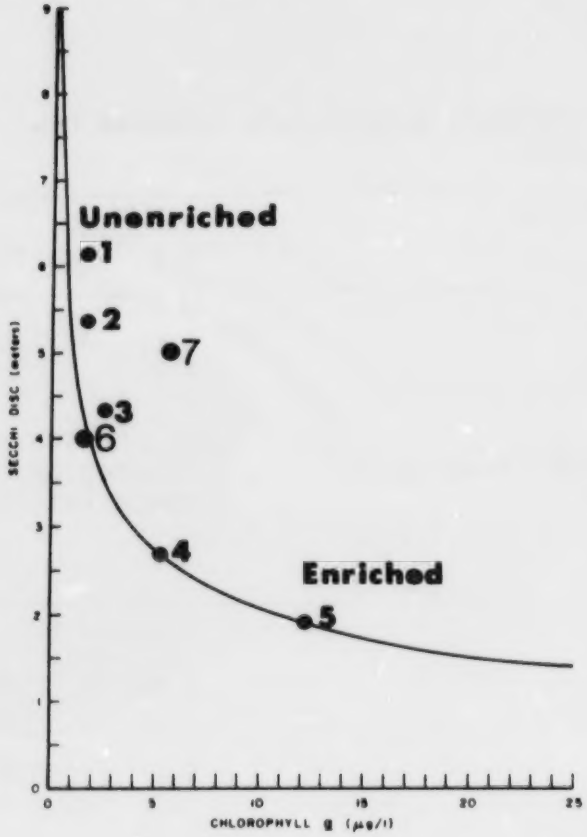
Insufficient samples were taken to allow meaningful conclusions to be made. It is recommended that at least six samples be taken throughout the ice-free period in order to get a reliable seasonal mean.

Station	Upper Black Bay		Clear Bay	
Date	S.D.	Chl.a	S.D.	Chl.a
July 4	4.0	1.8	5.0	5.0
Aug. 15	4.0	1.3	5.0	6.1

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Crystal Lake from 1977 to 1982

Station	A Upper Black Bay		B Clear Bay		C Gull Rock		D Leonards Island	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971								
1972								
1973								
1974								
1975								
1976								
1977	4.5	- -	4.3	- -	5.1*	- -	4.2	- -
1978	5.4	2.7	4.8	3.1	5.4	4.0	3.8	3.6
1979	5.4	2.3	5.2	3.6	4.8	2.1	4.8	2.2
1980	- -	- -	- -	- -	- -	- -	- -	- -
1981	5.0	3.5	4.4	3.2	4.6	3.0	4.5	3.0
1982	Insufficient sampling							

Figure 1: The relationship between Secchi disc and chlorophyll a for Crystal Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Crystal Lake - 1982
   Little Black Bay - 1982
7. Clear Bay - 1982

If participation in this program is to be continued, the sampling frequency must be increased.

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Davis Lake

Lutterworth Township
Provisional County of
Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Davis Lake in 1982

Station	1. Deep Bay Off Island		2. Deep Bay Off Islands	
Date	S.D.	Chl.a	S.D.	Chl.a
June 27	4.0	2.0	4.0	1.9
July 4	4.0*	2.6*		
July 5	4.5	1.6	4.5	2.0
Aug. 3	4.5	1.2	4.5	1.1
	4.3	1.9	4.3	1.7

* Sample taken in centre of lake and chlorophyll samples taken through depth of twice Secchi disc readings. All other chlorophyll samples taken through depth equal to Secchi disc reading.

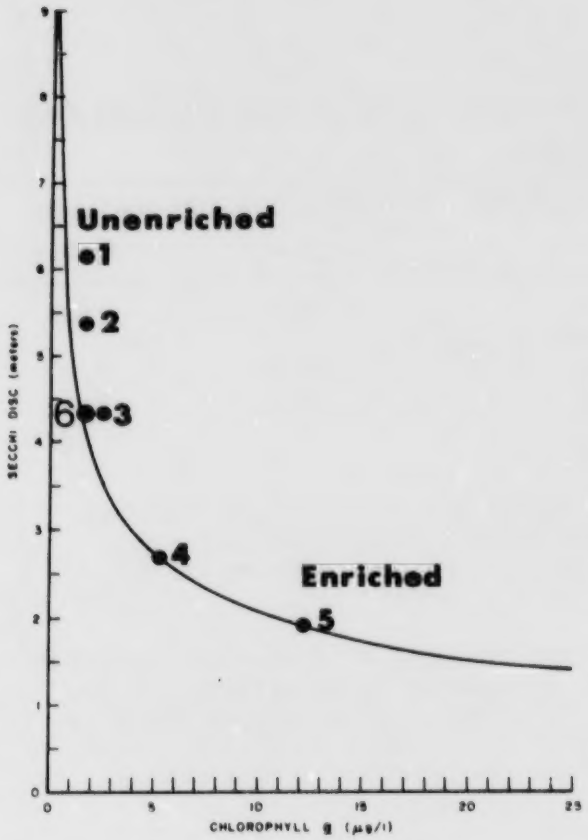
Insufficient sampling was done in 1982 to obtain a reliable seasonal average. Based on available information, Davis Lake would be considered unenriched. Chlorophyll results are not representative samples since they were not taken through a depth equal to twice the Secchi disc reading.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from

Station	1. Main		2. Deep Bay	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972	4.6	1.9		
1973	4.9*	3.7*		
1974	3.6*	1.4*		
1975	3.8	3.9		
1976	4.9*	2.2*		
1977	4.3*	- -		
1978	- -	- -		
1979	- -	- -		
1980	- -	- -		
1981	- -	- -	4.0*	1.9*
1982	4.3*	1.9*	4.3*	1.7*

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Davis Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Davis Lake - 1982

Since 1972, average Secchi disc readings have ranged from 3.6 m to 4.9 m. Average chlorophyll a concentrations have ranged from 1.4 to 3.9 ug/L. There has not been a noticeable change in water quality for Davis Lake for the period of record. We recommend that next year's chlorophyll samples be taken through a depth of twice the Secchi disc reading depth.

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Doeskin (Doe) Lake

Muskoka Ward

Town of Gravenhurst

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Doeskin Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 13	1.0	4.1
June 27	1.5	2.7
July 11	1.25	4.0
July 18	1.0	5.5
July 25	1.25	6.5
Aug. 2	1.0	10.6
	1.2	5.6

In 1982, the Secchi disc readings ranged from 1.0 to 1.5 m and chlorophyll a concentrations ranged from 2.7 to 10.6 ug/L. The degree of water transparency is very low due to the high densities of suspended algae and the natural brown colour of the water.

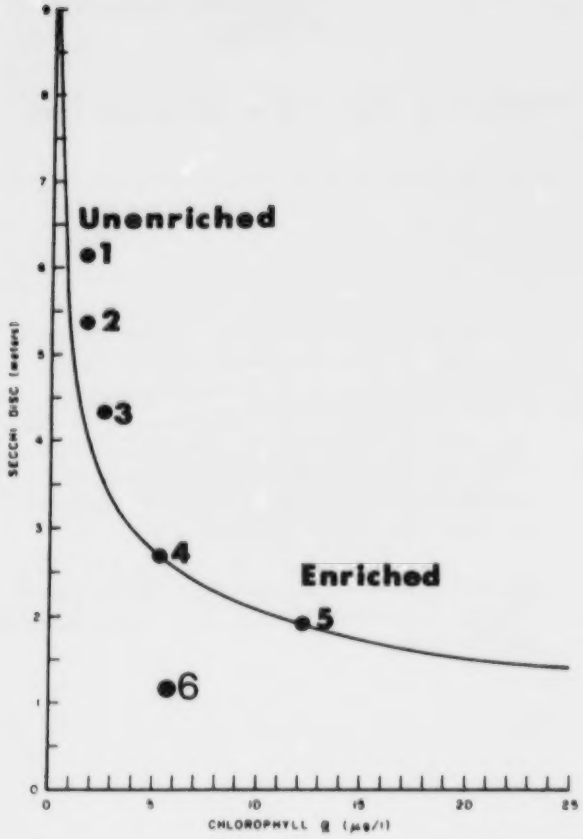
Based on the seasonal averages, Doeskin Lake would be considered enriched.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Doeskin Lake from 1978 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978	1.2	4.5
1979	- -	11.0*
1980	1.3	7.0
1981	1.3	5.5
1982	1.2	5.6

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Doeskin Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Doeskin Lake - 1982

Since 1978, the degree of water transparency of Doeskin Lake has remained very low and average chlorophyll a concentrations have fluctuated widely. The shallow nature of the lake (maximum depth 3 m) means that the lake is constantly mixing during the summer through wind and wave action. Nutrients trapped in the sediments are released into the water and support the large amounts of algae growth.

Water quality remains poor for recreational use.

We hope that participation in this programme continues in 1983.

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Drag Lake

Dudley & Dysart Townships

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Drag Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 11	4.9	1.5
July 5	4.6	2.3
July 19	5.2	1.4
July 26	4.9	3.2
Aug. 3	4.9	2.8
Aug. 8	5.5	1.8
Aug. 15	6.7	1.3
Aug. 22	6.7	1.0
Aug. 29	6.7	1.2
Sept. 7	6.7	1.2
	5.7	1.8

In 1982, the Secchi disc readings ranged from 4.6 to 6.7 m and chlorophyll a concentrations ranged from 1.0 to 3.2 ug/L. Based on the seasonal averages, Drag Lake would be considered unenriched characterized by a high degree of water transparency and low densities of suspended algae.

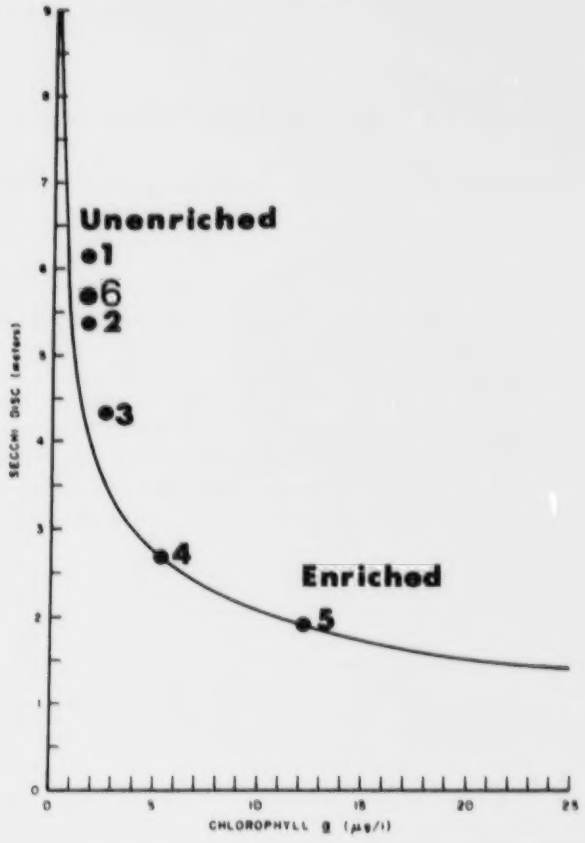
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Drag Lake from 1973 to 1982

Station	Main		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973	6.0	2.9		
1974	6.2**	0.6**		
1975	6.8**	1.4**		
1976	5.8	2.4		
1977	6.4	- -	6.2*	- -
1978	6.3	1.7		
1979	5.9	2.3		
1980	5.8	2.2		
1981	6.6	2.3		
1982	5.7	1.8		

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Drag Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Drag Lake - 1982

Since 1973, water quality of Drag Lake has been consistently good. Average Secchi disc readings have ranged from 5.7 to 6.8 m. Average chlorophyll a concentrations have ranged from 0.6 to 2.9 ug/L.

We hope that the enthusiastic participation in this programme continues next year.

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Dummer Lake

Dummer Township

Peterborough County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Dummer Lake in 1982

Station	South End	
Date	S.D.	Chl.a
May 24	4.2	2.4
June 13	3.5	3.9
June 20	3.3	3.1
July 4	4.5	3.3
July 11	3.5	4.4
Aug. 9	3.75	8.4
Aug. 15	3.5	4.5
Sept. 5	3.6	3.0
	3.7	4.1

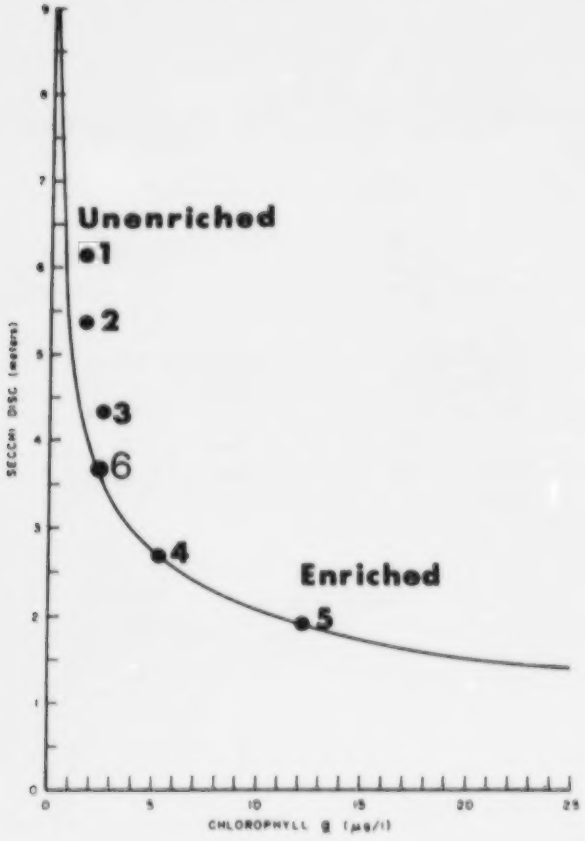
Another good sampling program was carried out in 1982. Based on the results shown in Table 1 Dummer Lake is considered moderately enriched with moderate algal densities and a moderate degree of water clarity.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Dummer Lake from 1978 to 1982

Station	1 - South End	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978	3.2 (*3.8)	2.8 (*3.9)
1979	3.2	3.7
1980	3.1	3.5
1981	3.7	3.8
1982	3.7	4.1

*Mean values from MOE/7 Links Water Quality Survey 1978.

Figure 1: The relationship between Secchi disc and chlorophyll a for Dummer Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Dummer Lake - 1982

The trend in the long term enrichment status of Dummer Lake is still not clear. The average algal density during each year may be relatively stable but water clarity fluctuates over the years of record. Only through continued participation in the sampling program can long term trends be defined.

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East Lake

Harcourt Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from East Lake in 1982

Station	West End	
Date	S.D.	Chl.a
July 4	4.0	3.2
July 18	6.0	4.6
July 25	6.0	6.0
Aug. 8	6.0	6.8
Aug. 14	6.0	11.0
Aug. 29	6.0	10.7
Sept. 9	6.0	3.8
	5.7	6.6

In 1982, the Secchi disc readings ranged from 4.0 to 6.0 m and chlorophyll a concentrations ranged from 3.2 to 11.0 ug/L. High densities of suspended algae were observed during August.

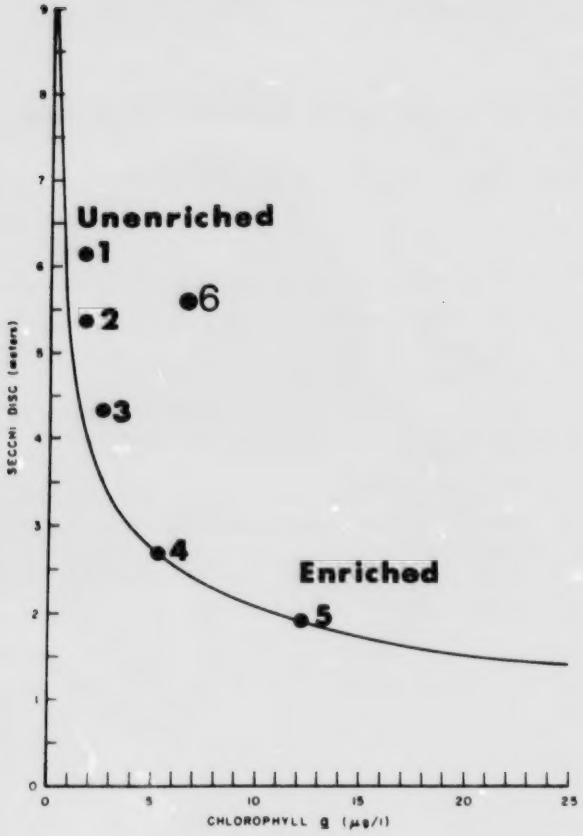
Based on the seasonal averages, East Lake would be considered moderately enriched, however, the degree of water transparency was high while the densities of suspended algae were also high.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from East Lake from 1971 to 1982

Station	Main	
Year	S.D.	Chl.a
1971	4.3	2.7
1972	- -	- -
1973	5.0*	1.9*
1974	3.6	1.5
1975	4.2	2.2
1976	4.2	2.3
1977	4.2	- -
1978	4.6	2.3
1979	4.6	2.7
1980	4.6	2.8
1981	3.7	2.8
1982	5.7	6.6

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for East Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. East Lake - 1982

An excellent sampling programme has been conducted on East Lake since 1971. During the period of record, the degree of water transparency has remained relatively constant and densities of suspended algae were relatively constant until 1982 when an algae bloom occurred.

We hope that participation in this programme continues in 1983 in order to monitor chlorophyll a concentrations.

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Echo Lake

McLean Ward
Township of Lake of Bays

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Echo Lake in 1982

Station	#1 West Bay		#2 North Channel		#3 East Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
June 26	2.5	2.2	2.5	1.9	2.5	2.4

Station	#4 North Opening to Main Channel		#5 South Opening to Main Channel		#6 Bottom of South Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
June 26	2.5	2.2	3.5	2.1	3.5	2.5

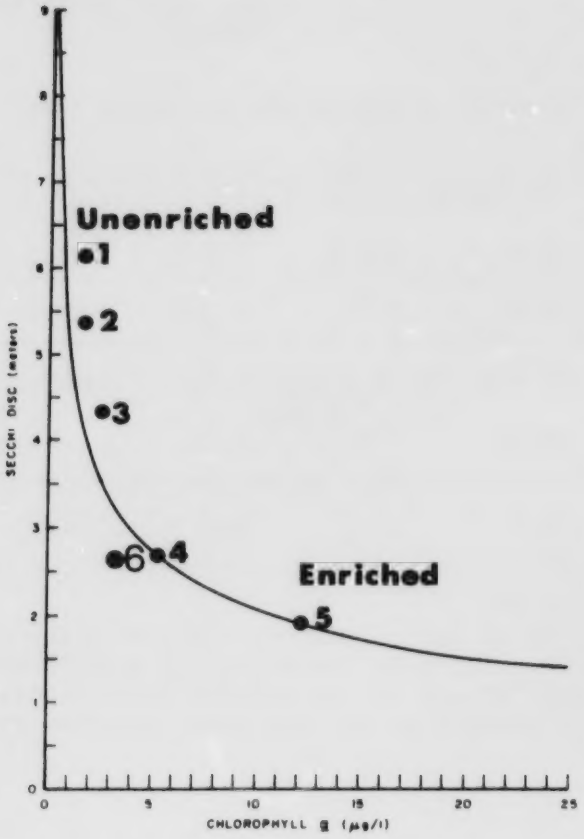
Insufficient sampling was done on Echo Lake in 1982 to make any comments on the water quality. Results obtained in a 1972 MOE survey indicate that Echo Lake would be considered moderately enriched. A natural brown colouration of the lake reduces the water transparency somewhat.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Echo Lake from 1972 to 1982

Station	1		2		3		4		5		6	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971												
1972	2.7*	3.2*										
1973												
1974												
1975												
1976												
1977												
1978												
1979												
1980	1.9**	2.7**	1.9**	1.7**	2.4**	2.6**	1.9**	1.9**	--	--	--	--
1981												
1982	2.5**	2.2**	2.5**	1.9**	2.5**	2.4**	2.5**	2.2**	3.5**	2.1**	3.5**	2.5**

* MOE
** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Echo Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Echo Lake - 1972

We hope that participation in this programme continues next year with an increase in sampling frequency.

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Farlain Lake

Tiny Township

Simcoe County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Farlain Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 1	--	AD
June 7	--	1.6
July 11	--	3.7
Aug. 2	--	2.0
Sept. 5	--	3.6
Sept.19	--	1.7
Oct. 8	--	2.0
Oct. 11	--	0.9
	A 4.0	2.2

In 1982, Secchi disc readings could not be taken due to the heavy weed growth in the lake. The approximate Secchi depth is 4 m. The chlorophyll a concentrations ranged from 0.9 to 3.7 ug/L.

Based on the averages, Farlain Lake would be considered moderately enriched characterized by moderate densities of suspended algae.

AD - anomalous data withdrawn at lab

A - Approximate Value

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Farlain Lake from 1973 to 1982

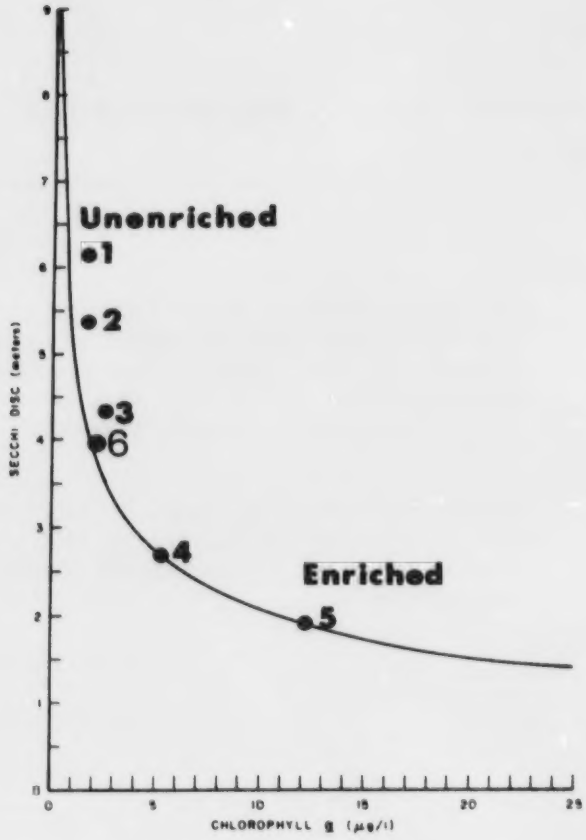
Station		
Year	S.D.	Chl.a
1971		
1972		
1973	3.9*	2.2*
1974		
1975		
1976		
1977		
1978	3.7	2.3
1979	G4.0	1.7
1980	G4.0	2.2
1981	--	1.4*
1982	A4.0	2.2

G - Secchi disc on bottom, reading higher than noted

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Farlain Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Farlain Lake - 1982

Since 1973, average chlorophyll a concentrations have remained relatively constant. The shallow nature of the lake (maximum depth 5 m) means that the lake is constantly mixing by wind and wave action throughout the summer. Nutrients which accumulate in the sediments are released into the lake stimulating algae and plant growth. In deeper lakes, this mixing does not occur to such a great extent.

We hope that participation in this programme continues in 1983.

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George's Lake

Harcourt Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from George's Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 20	2.0	5.4
June 27	2.5	6.9
July 4	2.75	7.0
July 18	2.75	7.1
July 25	2.25	7.1
Aug. 7	2.50	5.6
Aug. 15	2.75	4.4
Aug. 29	2.75	4.4
	2.5	6.0

In 1982, the Secchi disc readings ranged from 2.0 to 2.75 m and chlorophyll a concentrations ranged from 4.4 to 7.1 ug/L.

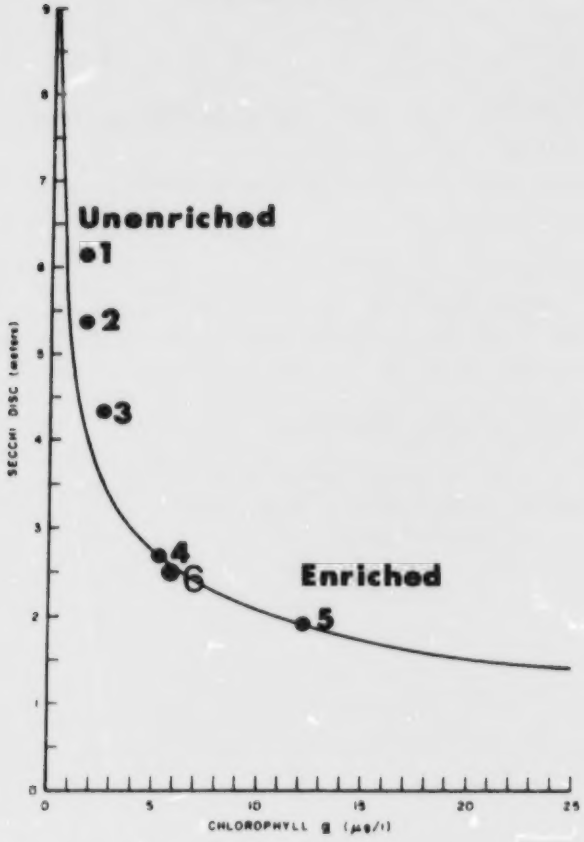
Based on the seasonal averages, George's Lake would be considered enriched, characterized by a low degree of water transparency and high densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from George's Lake from 1973 to 1982

Station		
Year	S.D.	Chl.a
1971		
1972		
1973	2.2*	5.8*
1974	2.3	3.0
1975	2.5	10.2
1976	2.6	7.2
1977	2.8	- -
1978	2.6	10.3
1979	2.5	10.7
1980	1.8	12.1
1981	1.9	9.1
1982	2.5	6.0

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for George's Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. George's Lake

Since 1973, the average Secchi disc readings have remained relatively constant ranging from 1.8 to 2.8 m. Average chlorophyll a concentrations have fluctuated from 3.0 to 12.1 ug/L for the period of record. In small shallow lakes such as George's Lake, nutrients from the sediments are constantly mixed into the lake by wind and wave action. This constant mixing stimulates growth of algae and aquatic plants.

Water quality of George's Lake remains fair for recreational use, however, periodic algae blooms do occur.

We hope that participation in this programme continues in 1983.

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Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Go Home Lake

Gibson Ward
Township of Georgian Bay

District Municipality of
Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Go Home Lake in 1982

Station	A (North)		B (South)	
Date	S.D.	Chl.a	S.D.	Chl.a
May 21	4.75	0.6	4.00	0.5
June 18	4.75	1.0	4.25	0.8
July 8	3.50	AD	3.50	AD
July 18	4.00	1.7	4.50	1.5
July 29	5.00	1.5	5.20	1.6
Aug. 15	5.50	1.9	6.00	2.0
Sept.10	4.10	1.0	4.50	0.6
	4.5	1.3	4.6	1.2

AD - anomalous data withdrawn at lab.

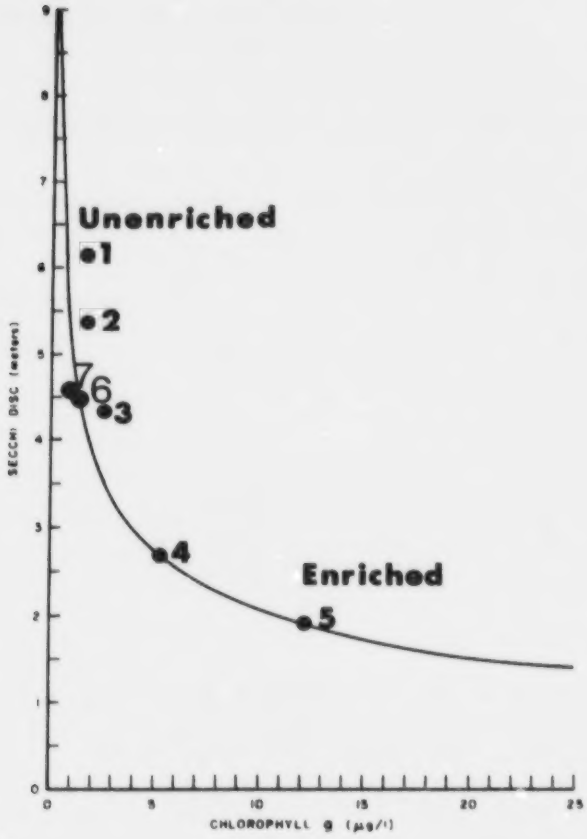
In 1982, the Secchi disc readings ranged from 3.5 to 6.0 m and chlorophyll a concentrations ranged from 0.5 to 2.0 ug/L. Based on the seasonal averages, Go Home Lake would be considered unenriched, characterized by a moderately high degree of water transparency and low densities of suspended algae. The degree of water transparency is slightly lower than expected from chlorophyll a concentrations, due to the natural brown colouration of the water.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Go Home Lake from 1971 to 1982

Station	A (North)		B (South)	
Year	S.D.	Chl.a	S.D.	Chl.a
1971	3.6	1.4		
1972				
1973				
1974				
1975				
1976	5.6	1.9	5.4	2.3
1977	6.2*	- -	5.1*	- -
1978	- -	- -		
1979	4.6	2.6	4.8	3.2*
1980	- -	- -	- -	- -
1981	4.8*	1.3*	4.7*	1.8*
1982	4.5	1.3	4.6	1.2

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Go Home Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Go Home Lake - 1982 (North)
7. Go Home Lake - 1982 (South)

Since 1971, there has been no noticeable change in water quality in Go Home Lake. Water quality remains very good for recreational use.

The degree of water transparency has remained high, ranging from 3.6 to 6.2 m. The average chlorophyll a concentrations have ranged from 1.2 to 3.2 ug/L.

We hope that the enthusiastic participation in 1982 continues next year.

For additional copies of this report, please contact:

Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Gull Lake

Muskoka Ward
Town of Gravenhurst

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Gull Lake in 1982

Station	Lower Gull (W. End)		Upper Gull (W. End)	
Date	S.D.	Chl.a	S.D.	Chl.a
May 29	5.25	AD	4.0	0.3
June 20	3.25	3.7	3.75	3.8
July 25	2.8	1.6	3.0	1.7
Aug. 15	3.1	1.8	3.1	1.9
Sept.19	3.7	2.7	4.0	2.7
	3.6	2.4	3.6	2.1

AD - anomalous data withdrawn at lab.

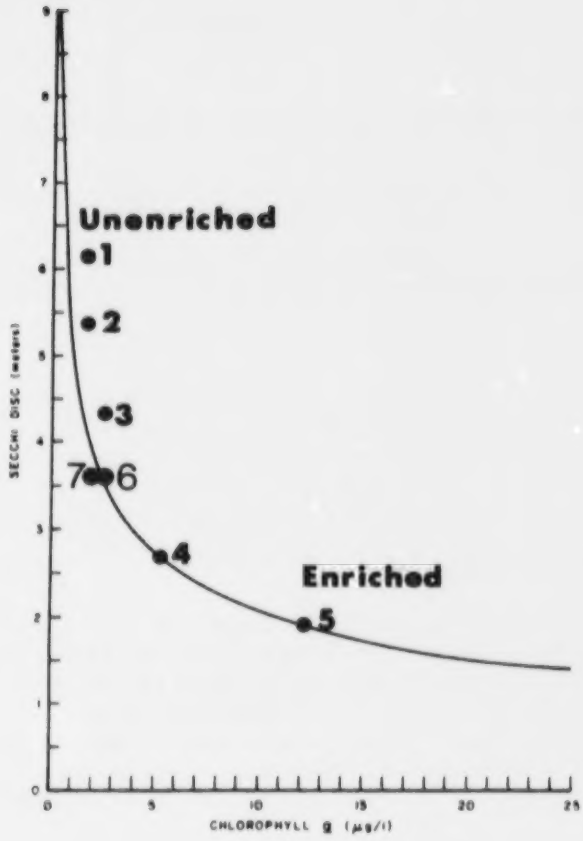
1982 was the first year for sampling on Gull Lake as part of the Self-Help programme. Secchi disc readings ranged from 2.8 to 5.25 m and chlorophyll a concentrations ranged from 0.3 to 3.8 ug/L. Water quality at both stations was good. Based on the seasonal averages, Gull Lake would be considered moderately enriched, characterized by a moderate degree of water transparency and moderately low densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Gull Lake in 1982

Station	Lower		Upper	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973				
1974				
1975			5.0**	2.4**
1976				
1977				
1978				
1979				
1980				
1981				
1982	3.6*	2.4*		

* Based on less than 6 samples
** MOE Data

Figure 1: The relationship between Secchi disc and chlorophyll a for Gull Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Gull Lake - 1982 (Lower)
7. Gull Lake - 1982 (Upper)

Since sampling was done by MOE in 1975, there has not been a noticeable change in water quality. The degree of water transparency is slightly lower, however, this is within the range of natural yearly fluctuation.

We hope that participation in this programme continues so that we can observe any long-term changes in water quality.

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Gull Lake

Lutterworth Twp.

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Gull Lake in 1982

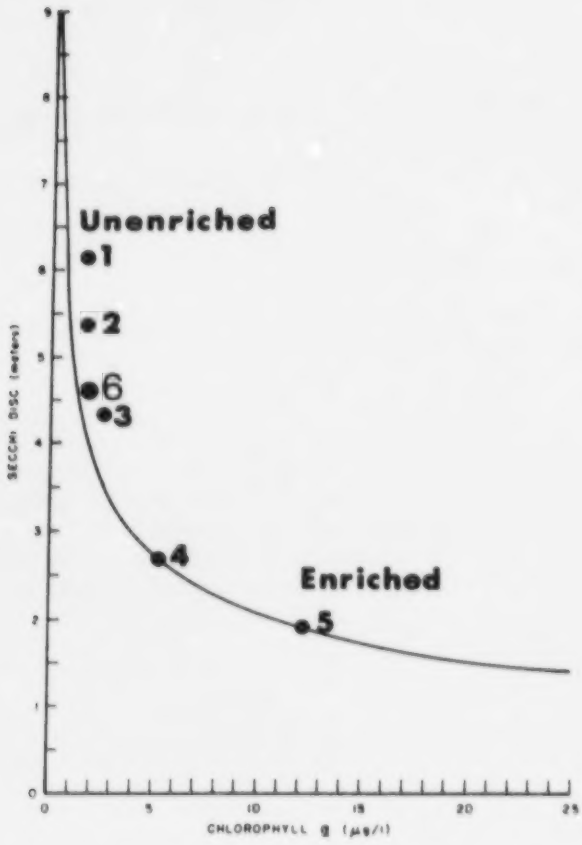
Station	Miner's Bay	
Date	S.D.	Chl.a
June 20	3.0	1.2
June 27	4.2	1.3
July 4	5.0	1.1
July 4	5.6	1.2
July 11	5.2	1.6
July 18	5.5	1.2
Aug. 2	5.2	2.2
Aug. 8	4.25	2.2
Aug. 22	4.75	1.5
Sept. 5	4.0	2.0
Sept. 7	4.25	2.1
	4.6	1.6

In 1982, Secchi disc readings ranged from 3.0 to 5.6 m and chlorophyll a concentrations ranged from 1.1 to 2.2 ug/L. Water quality remained relatively constant throughout the sampling period. Based on the seasonal averages, Gull Lake would be considered unenriched, characterized by a moderately high degree of water transparency and low densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Gull Lake from 1976 to 1982

Station	1 Sandy Bay		2 Deep Bay		3 Long Island		4 Miners Bay	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971								
1972								
1973					5.1	1.0		
1974								
1975								
1976	5.4	1.9	3.7	1.5	5.7	2.0	5.5	2.0
1977	4.7	- -	- -	- -	5.8	- -	5.4	- -
1978	4.6	1.8	5.5	2.0	5.5	1.9	5.4	1.7
1979	5.5	2.0	6.1	2.0	5.9	2.0	5.6	2.2
1980	5.3	1.8	- -	- -	- -	- -	- -	- -
1981	Insufficient sampling							
1982	- -	- -	- -	- -	- -	- -	4.6	1.6

Figure 1: The relationship between Secchi disc and chlorophyll a for Gull Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Gull Lake - 1982

Since 1976, average Secchi disc readings in Miner's Bay have ranged from 4.6 to 5.6 m. Average chlorophyll a concentrations have ranged from 1.6 to 2.2 ug/L. There has been no noticeable change in water quality during the period of record. Water quality remains very good for recreational use. We congratulate the cottagers on conducting an excellent sampling program in 1982 and we hope participation continues next year.

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Haliburton Lake

Harburn Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Haliburton Lake in 1982

Station	Main North End		South Bay	
Date	S.D.	Chl.a	S.D.	Chl.a
May 24	7.5	0.9	4.25	4.4
June 6	7.25	1.6	4.5	3.0
June 13	7.0	1.8	4.5	4.2
June 20	6.3	1.8	3.3	3.7
June 27	6.0	2.7	3.5	3.7
July 4	6.0	2.5	3.3	2.8
July 11	4.0	1.5	2.5	LA
July 18	6.5	1.5	4.0	2.8
July 26	- -	- -	3.75	5.2
Aug. 2	7.0	2.4	4.0	5.1
Aug. 15	- -	2.2	- -	6.2
Aug. 22	6.0	2.7	4.2	4.2
Aug. 29	5.3	2.7	3.5	5.7
Sept. 7	6.5	2.5	4.0	4.5
	6.3	2.1	3.8	4.3

In 1982, Secchi disc readings in the main part of Haliburton Lake ranged from 4.0 to 7.5 m and average chlorophyll a concentrations ranged from 0.9 to 2.7 ug/L. The north end of the lake would be considered unenriched, characterized by a high degree of water transparency and low densities of suspended algae.

South Bay would be considered moderately enriched, characterized by moderate water transparency and high densities of suspended algae.

LA - Lab accident

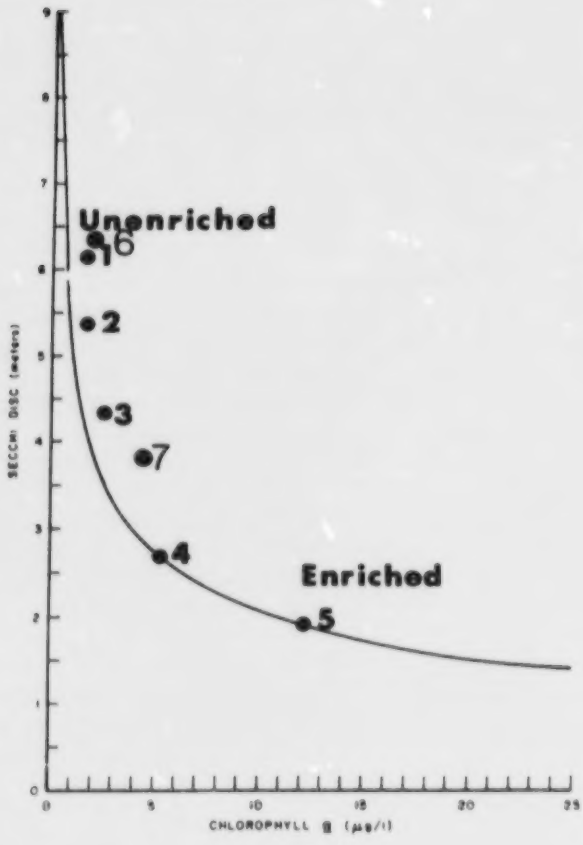
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Haliburton Lake from 1972 to 1982

Station	Main-North End		South Bay	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972	6.3*	1.0*	3.5*	2.7*
1973	6.0	1.8	- -	- -
1974	6.7	1.1	3.8	2.4
1975	6.4	2.5	3.6	3.3
1976	6.0	1.7	4.0	4.7
1977	7.6(6.4*)	--	4.3(3.6*)	- -
1978	7.3	1.9	4.2	3.2
1979	6.5	3.4	4.1	5.3
1980	6.5**	2.9**	3.4	5.9
1981	6.8	1.6	4.6	3.6
1982	6.3	2.1	3.8	4.3

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Haliburton Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Haliburton Lake - 1982 North End
7. South Bay

Since 1972, water quality of the main body of Haliburton Lake has remained relatively constant with average Secchi disc readings ranging from 6.0 to 7.6 m. Average chlorophyll a concentrations have ranged from 1.1 to 3.4 ug/L. In South Bay, water quality is not as good, due to the shallow nature of the bay and lack of circulation of water with the main part of the lake.

We hope that the enthusiastic participation in the programme continues next year.

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Harp Lake

Chaffey Ward

Town of Huntsville

District Municipality of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Harp Lake in 1982

Station	Main	
Date	S.D.	Chl.a
July 18	5.0	2.1
July 25	3.9	3.0
Aug. 1	3.6	3.1
Aug. 15	4.35	4.1
Aug. 30	3.8	2.5
	4.1	3.0

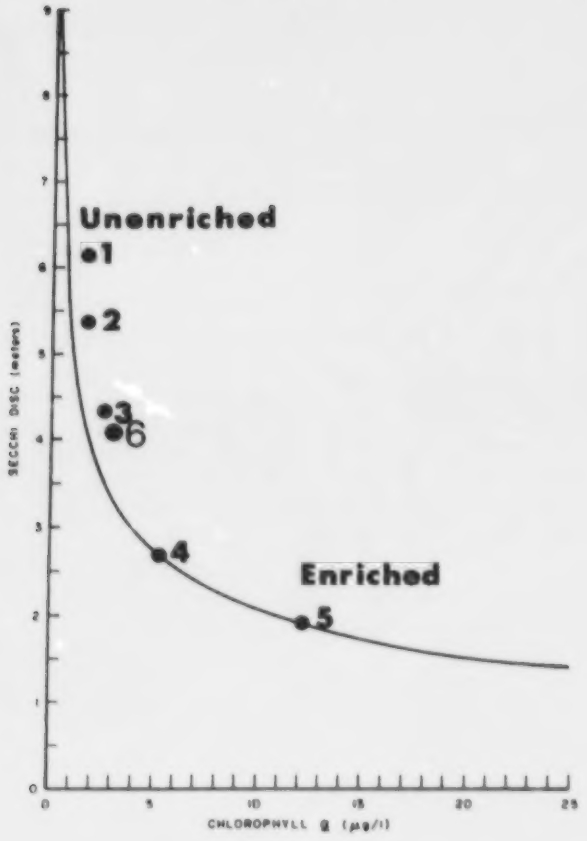
In 1982, the Secchi disc readings ranged from 3.6 to 5.0 m and chlorophyll a concentrations ranged from 2.1 to 4.1 ug/L. Based on the averages available, Harp Lake would be considered moderately enriched, characterized by a moderately high degree of water transparency and moderate densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Harp Lake from 1973 to 1982

Station	Main		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973	4.0	3.7	4.4*	2.8*
1974	3.7	2.1	3.7*	2.1*
1975	5.0	3.3	4.9*	3.3*
1976	4.5**	2.5**		
1977	4.8	- -		
1978	4.5	1.9		
1979	4.6**	2.8**		
1980	4.1	3.1		
1981	4.5**	2.9**		
1982	4.1**	3.0**		

* MOE data
** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Harp Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Harp Lake - 1982

Since 1973, water quality of Harp Lake has remained relatively unchanged. Average Secchi disc readings have ranged from 3.7 to 5.0 m and average chlorophyll a concentrations have ranged from 1.9 to 3.7 ug/L. The degree of water transparency in Harp Lake is lower than expected due to the natural brown colouration of the water.

We hope that participation in this programme continues next year.

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Head Lake

Laxton & Digby Twps.

Victoria County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Head Lake in 1982

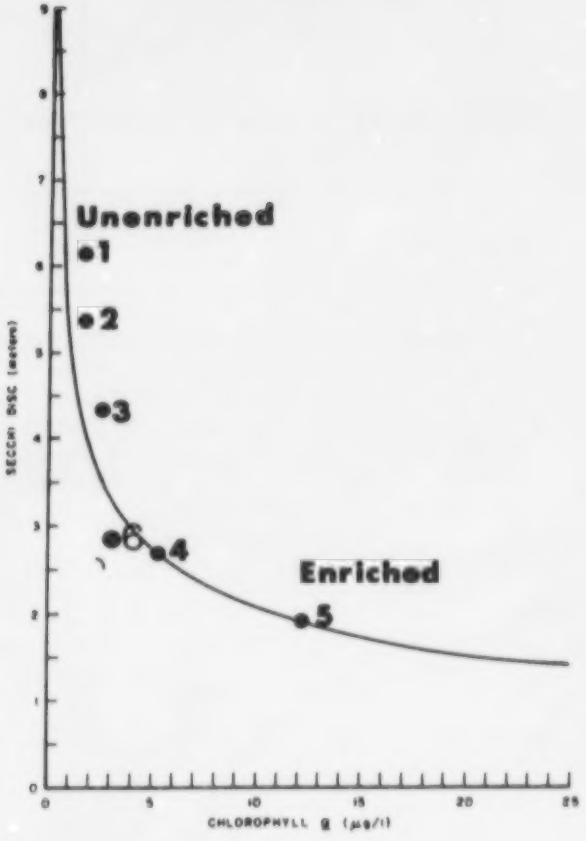
Station	Main (East)	
Date	S.D.	Chl.a
May 24	4.5	1.4
May 30	4.5	1.3
June 7	3.25	3.5
June 13	3.5	2.2
June 20	3.0	3.0
June 27	2.5	1.5
July 4	2.8	2.0
July 11	2.5	2.7
July 18	2.5	2.2
July 26	2.0	3.7
Aug. 2	2.0	5.3
Aug. 8	3.0	3.5
Aug. 15	2.5	3.6
Aug. 22	2.0	3.2
Aug. 29	2.0	3.9
Sept. 6	2.0	2.3
	2.8	2.8

Another excellent sampling program was carried out on the lake in 1982. Based on the two parameters shown in Table 1 Head Lake is considered moderately enriched with moderate algal densities and a moderate degree of water transparency.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Head Lake from 1972 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972	3.2	2.8
1973	2.9	3.0
1974	2.8	2.0
1975	2.8	2.7
1976	3.0	2.9
1977	3.3	- -
1978	2.9	2.5
1979	3.2	2.5
1980	3.3	2.7
1981	2.8	2.5
1982	2.8	2.8

Figure 1: The relationship between Secchi disc and chlorophyll a for Head Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Head Lake - 1982

Head Lake continues to have a relatively stable long term enrichment status. The average water clarity for the period of record is 3.0 m while the corresponding average algal density as indicated by chlorophyll a concentration was 2.6 ug/L. The sampler(s) is to be congratulated for consistent hard work which has resulted in an impressive 11 year data set. It is hoped that the sampling program will be continued on Head Lake.

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Henshaw Lake

Medora Ward

Twp. of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Henshaw Lake in 1982

Station	Opposite Island		Between 2 Islands	
Date	S.D.	Chl.a	S.D.	Chl.a
May 24	3.6	1.3	3.8	1.0

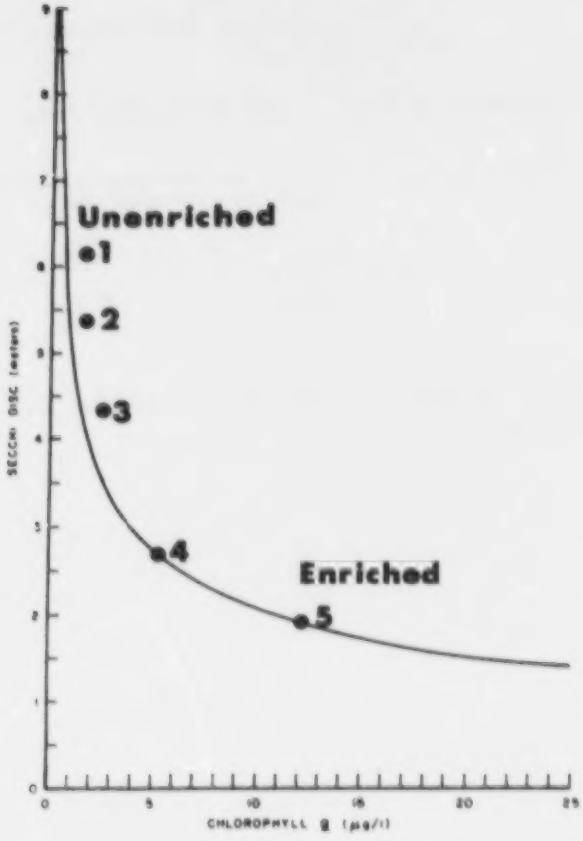
Insufficient sampling was done in 1982 to make any reliable conclusions regarding water quality.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978		
1979		
1980		
1981		
1982	3.4*	

* MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6.

A water quality survey of Henshaw Lake was done by MOE in 1982. We hope to have the chlorophyll results summarized for next year's report. We hope that participation in this programme continues next year with an increase in sampling frequency.

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Horseshoe (Elsie) Lake

Minden Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Horseshoe Lake in 1982

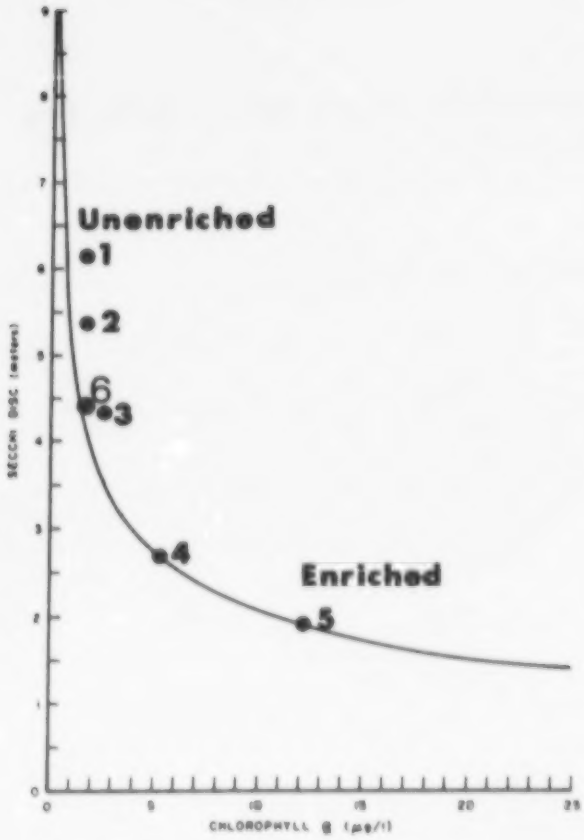
Station	North Side	
Date	S.D.	Chl.a
July 4	5.2	1.3
July 18	4.5	1.0
July 25	4.5	1.7
Aug. 2	3.5	1.8
Aug. 15	4.5	2.2
Aug. 29	4.5	2.4
Oct. 30	4.0	2.2
	4.4	1.8

In 1982, the Secchi Disc readings ranged from 3.5 to 5.2 m and chlorophyll a concentrations ranged from 1.0 to 2.4 ug/L. Based on the seasonal averages, Horseshoe Lake would be considered unenriched, characterized by a moderately high degree of water transparency and low densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Horseshoe Lake from 1973 to 1982

Station	North Side	
Year	S.D.	Chl.a
1971		
1972		
1973	5.3	2.3
1974	4.6	0.9
1975	6.8	3.7
1976	6.6	2.4
1977	6.7	- -
1978		
1979		
1980		
1981		
1982	4.4	1.8

Figure 1: The relationship between Secchi disc and chlorophyll a for Horseshoe Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Horseshoe Lake - 1982

Since 1973, there has been a decrease in the degree of water transparency from a maximum of 6.8 m in 1975 to 4.4 m in 1982. This has not been accompanied by an increase in the density of suspended algae. Water quality remains good for recreational use.
We recommend that participation in this programme continue next year in order to determine whether this is a temporary condition.

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Jack Lake

Burleigh & Methuen Twps.

Peterborough County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Jack Lake in 1982

Station	Sharp's Bay		Brook's Bay	
Date	S.D.	Chl.a	S.D.	Chl.a
July 4	4.5	2.6	3.0	6.6
July 18	5.5	2.4	3.5	6.0
Aug. 3	4.5	2.4	3.5	10.5
Aug. 29	5.0	4.9	4.0	2.3
Sept. 9	5.5	2.7	4.0	AD
	5.0	3.0	3.6	6.3

AD - anomalous data withdrawn

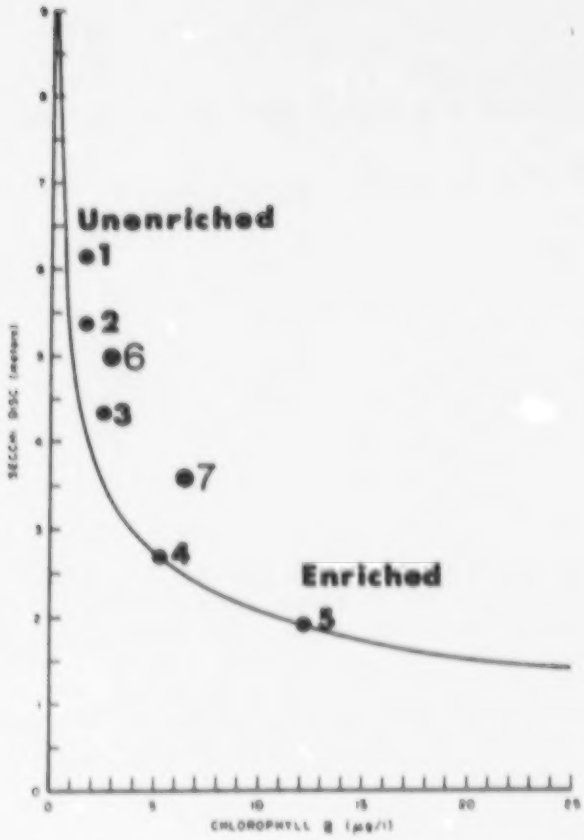
From Table 1 Sharpe's Bay was considered moderately enriched with moderate algal densities but with a relatively high degree of water clarity. Brook's Bay was also considered moderately enriched but with poorer water clarity and a high algal density. The lack of correspondence between clarity and chlorophyll a concentration likely relates to an uneven vertical distribution of algae in both Bays.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Jack Lake from 1971 to 1982

Station	Sharp's Bay		Brook's Bay	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972			3.9	2.6
1973				
1974	4.4	1.4	3.4	1.9
1975				
1976	4.5	2.9	3.4	3.7
1977	4.7		3.5	
* 1978	4.7 (5.2*)	2.6 (2.6*)	3.3 (3.8*)	3.9 (3.4*)
1979	5.2	2.6	3.8	3.4
1980	4.9	3.1	3.4	5.3
1981	4.6	3.0	3.5	4.2
1982	5.0	3.0	3.6	6.3

* Mean values from MOE/7 Links Water Quality Survey

Figure 1: The relationship between Secchi disc and chlorophyll a for Jack Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Jack Lake - 1982 - Sharp's Bay
7. Jack Lake - 1982 - Brook's Bay

Water clarity continues to be relatively stable in both Bays over the period of record. However, in Brook's Bay algal density is slightly higher and a trend toward higher algal density may be continuing. It is recommended that, if at all possible, more frequent sampling be carried out in subsequent sampling programs.

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Kashagawigamog Lake

Dysart & Minden Townships

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Kashagawigamog Lake in 1982

Station	South	
Date	S.D.	Chl.a
June 20	3.0	4.1
July 11	2.9	2.5
July 25	- -	2.0
Aug. 2	2.1	2.5
Aug. 8	3.7	2.5
Aug. 15	4.3	3.0
Aug. 29	4.1	2.1
Sept. 6	3.7	2.2
	3.4	2.6

In 1982, the Secchi disc readings ranged from 2.1 to 4.3 m and chlorophyll a concentrations ranged from 2.0 to 4.1 ug/L. Based on the seasonal averages, Kashagawigamog Lake would be considered moderately enriched, characterized by a moderate degree of water transparency and moderately low densities of suspended algae.

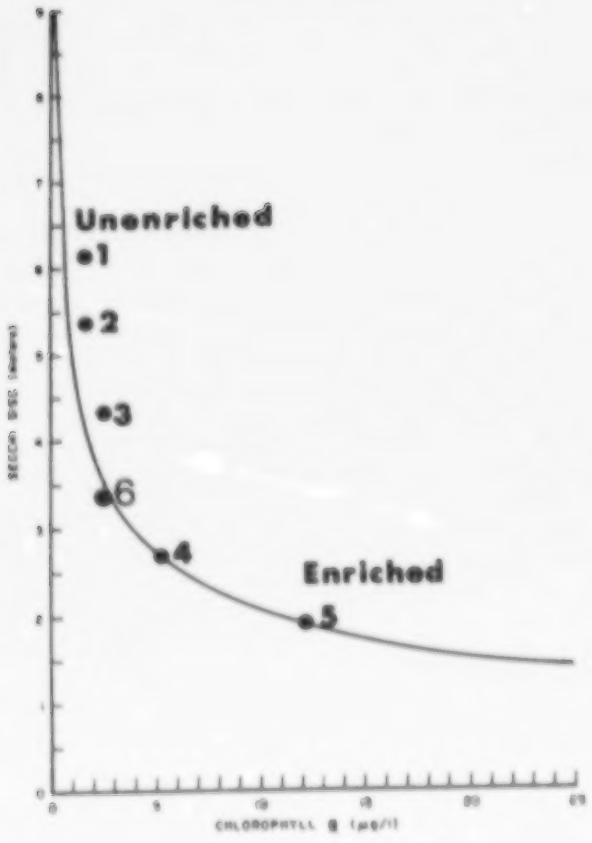
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Kashagawigamog Lake from 1972 to 1982

Station	South		North	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972	- -	- -	4.2	4.7
1973	4.5	1.7	4.6	2.0
1974	4.6	1.5	4.4	1.4
1975	5.2**	1.1**	4.9	1.7
1976	4.5**(5.4*)	1.3**(2.1*)	4.0(4.7*)	2.7(2.8*)
1977	5.6	- -	4.9	- -
1978	5.4	1.6	4.1	1.8
1979	4.9	2.3	- -	- -
1980	4.6	3.2	- -	- -
1981	3.8	3.5	- -	- -
1982	3.4	2.6	- -	- -

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Kashagawigamog Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Kashagawigamog Lake - 1982

Since 1972, Kashagawigamog Lake has shown a gradual decrease in water transparency and an increase in densities of suspended algae.

We recommend that participation in this programme continues next year in order to determine whether this is a long-term change in water quality.

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Kasshabog Lake

Belmont & Methune Townships

Peterborough County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Kasshabog Lake in 1982

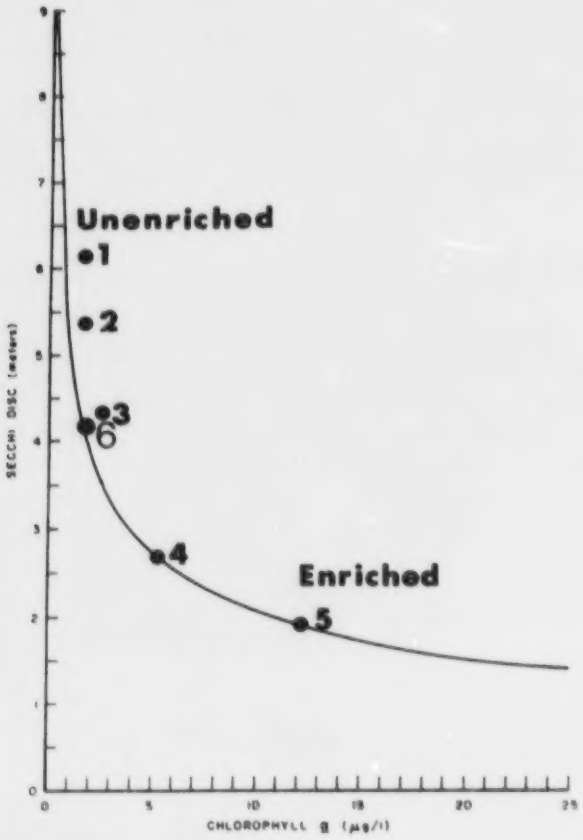
Station	Middle		
Date	S.D.	Chl.a	
May 30	5.5	- -	Minor fluctuations were noted over the sampling period in both parameters shown in Table 1. Based on the average values, Kasshabog Lake was considered unenriched with moderately low algal densities and relatively high water transparency.
June 5	4.5	1.3	
June 27	4.1	2.1	
July 4	NA	2.7	
July 18	NA	1.3	
July 25	4.0	2.4	
Aug. 2	3.9	2.7	
Aug. 15	3.2	1.4	
Aug. 29	3.4	2.8	
Sept. 6	3.5	0.5	
Sept.26	3.5	2.0	
Oct. 3	5.9	1.2	
	4.2	1.8	

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Kasshabog Lake from 1978 to 1982

Station	Middle	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
* 1978	4.0	1.7
1979	- -	- -
1980	4.9	1.8
1981	4.4	2.5
1982	4.2	1.8

* MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Kasshabog Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Kasshabog Lake - 1982

No clear trend in long term enrichment status of Kasshabog Lake is evident for the period of record. Continued participation in the sampling program is encouraged to allow definition of these trends.

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Kawagama Lake

Sherborne, Havelock, Livingstone and McClintock Twps.

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Kawagama Lake in 1982

Station	1 Minden Bay		3 Fish Pole Pt.		4 Long Is.		6 Fletcher Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 4	4.9	4.1	6.7	0.6	9.4	0.7	6.1	1.5
July 18	1.6?	0.9	3.4?	0.6	2.7?	0.6	- -	- -
Aug. 3	- -	- -	- -	- -	- -	- -	5.5	1.7
Aug. 5	4.9	4.8	9.8	0.9	9.4	1.1	8.5	1.9
Aug. 15	4.9	6.3	8.8	1.0	10.1	0.8	- -	- -
Aug. 31	4.0	LA	8.2	LA	8.5	LA	- -	- -
Sept. 9	- -	- -	- -	- -	- -	- -	- -	- -
Sept.12	4.5	2.4	8.1	1.0	9.1	1.4	6.0	2.4
Oct. 3	- -	- -	- -	- -	- -	- -	5.5	2.0
Oct. 11	- -	- -	- -	- -	- -	- -	6.1	1.7
	4.6	3.7	7.5	0.8	9.3	0.9	6.3	1.9

Stn. 5 only sampled once so not included on Table 1.
LA - Lab accident
? - readings questionable - not included in average

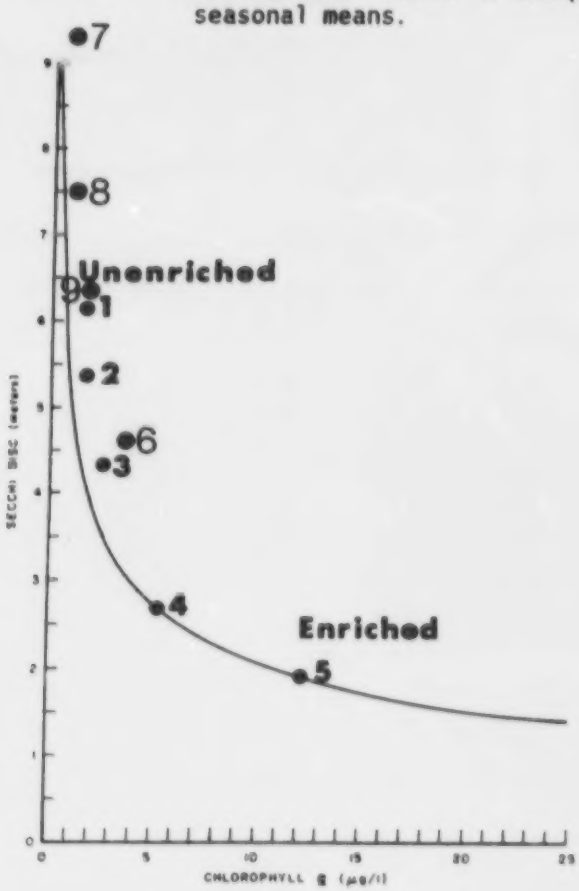
In 1982, stations 3, 4 and 6 would be considered unenriched, characterized by Secchi disc readings ranging from 5.5 to 10.1 m and chlorophyll a concentrations ranging from 0.6 to 2.4 ug/L. Station 1 would be considered moderately enriched with a moderately high degree of water transparency and moderately high densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Kawagama Lake from 1976 to 1982

Station	1		2		3		4		5		6		7	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971														
1972														
1973														
1974														
1975														
1976	4.5	2.5	7.2	1.6	9.6	1.0	10.1	1.0	9.5	1.1	7.1	1.4	9.5	1.3
1977	5.2	- -	7.8*	- -	8.6*	- -	9.4*	- -	10.8	- -	7.1*	- -	10.2*	- -
1978	5.5	2.9	7.9*	1.6*	8.0*	0.7*	10.4*	0.7*	7.1	1.0	7.2*	1.4*	8.8*	1.4*
1979	5.0*	3.4*	7.7*	2.5*	9.3*	0.8*	8.3	1.2	8.4	1.5	6.2*	2.0*	9.6*	1.1*
1980	5.1*	2.3*	7.0*	2.1*	9.2	1.0	9.3*	0.7*	8.2*	0.7*	6.0*	2.3*	7.3	1.3
1981	5.4*	2.8*	7.5*	1.5*	9.9*	1.0*	9.3*	1.1*	9.4*	0.9*	6.6	1.5	9.3*	1.0*
1982	4.6	3.7	- -	- -	7.5	0.8	9.3	0.9	9.1*	0.6*	6.3	1.9	- -	- -

* Based on less than 6 samples
1976 MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Kawagama Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Kawagama Lake - 1982 Stn. 1
7. Station 3
8. Station 4
9. Station 6

Since 1976, there have been no noticeable changes in water quality in Kawagama Lake. Stations located in the shallow bays such as Minden Bay (max. depth 6.5 m) have a lower degree of water transparency and higher densities of suspended algae. Water quality remains excellent for recreational use.

We hope that participation in this programme continues in 1983.

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Kennaway Lake

Harcourt Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Kennaway Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 20	3.0	3.1
June 27	3.0	3.3
July 18	2.5	2.9
Aug. 8	3.0	4.0
Aug. 29	3.0	2.5
	2.9	3.2

In 1982, the Secchi disc readings ranged from 2.5 to 3.0 m and chlorophyll a concentrations ranged from 2.5 to 4.0 ug/L. Based on the seasonal averages Kennaway Lake would be considered moderately enriched, characterized by a low degree of water transparency and moderate densities of suspended algae.

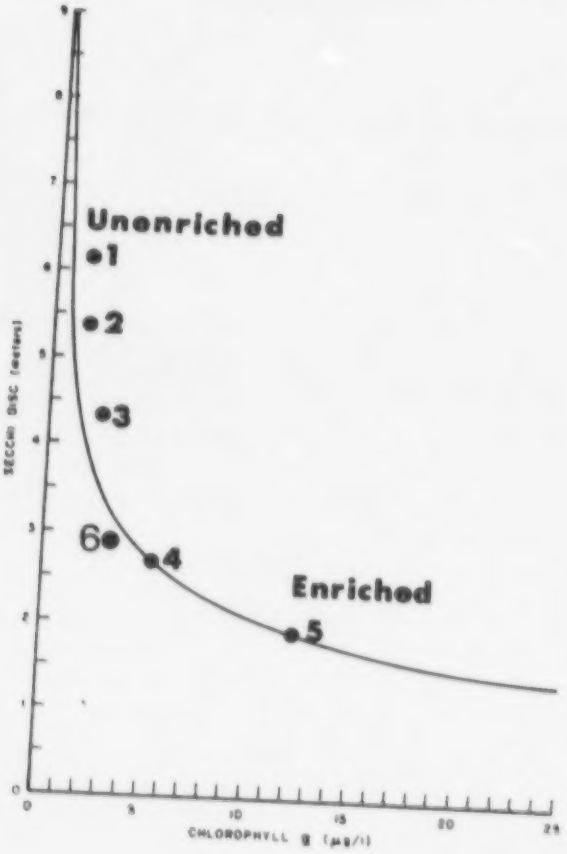
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Kennaway Lake from 1973 to 1980, 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973	4.1	3.3
1974	3.6	1.9
1975	3.8	2.7
1976	4.2	3.8
1977	4.7(4.5*)	- -
1978	3.6	2.4
1979	4.3	2.4
1980	4.2	2.2
1981	- -	- -
1982	2.9**	3.2**

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Kennaway Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Kennaway Lake - 1982

Since 1973, there has been some fluctuation in average chlorophyll a concentrations ranging from 1.9 to 3.8 ug/L. Average Secchi disc readings have not fluctuated as much until 1982 when the average readings dropped to 2.9 m, which is the lowest reading observed for the period of record. Water quality is suitable for recreational use.

We recommend that sampling be done in 1983 to determine if this is a temporary change.

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Kennisis Lake

Havelock & Guilford Twps.

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Kennisis Lake in 1982

Station	A		B		C	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
June 20	7.0	0.8	7.0	AD	7.0	0.9
July 4	8.0	0.9	9.0	0.9	9.0	AD
July 19	7.0	1.1	- -	- -	- -	- -
Aug. 8	7.5	1.4	7.5	AD	7.5	1.2
Aug. 29	8.5	1.5	8.5	1.3	8.0	1.5
	7.6	1.1	8.0	1.1	7.9	1.2

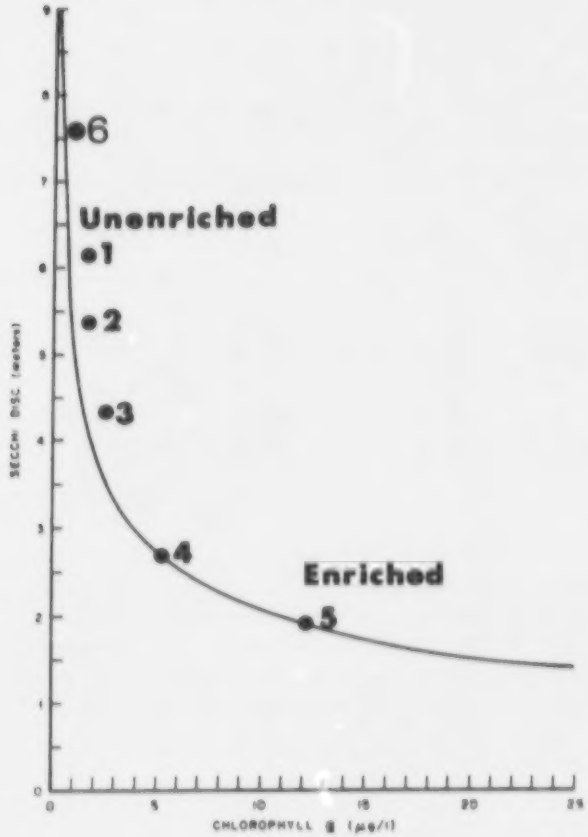
In 1982, Secchi disc readings ranged from 7.0 to 9.0 m and chlorophyll a concentrations ranged from 0.8 to 1.5 ug/L. Based on the information available, all stations in Kennisis Lake would be considered unenriched, characterized by a high degree of water transparency and low densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Kennisis Lake from 1972 to 1982

Station	A		B		C	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972	6.7	1.0	9.0	0.9	8.8	0.9
1973	7.8	0.7	9.5	0.8	9.5	0.8
1974	7.7	0.8	8.6	0.5	- -	- -
1975	9.6	1.0	10.0	0.6	10.5	0.8
1976	8.2	1.4	9.3	1.4	9.6	1.2
1977	9.4(9.2**)	- -	9.5	- -	9.6	- -
1978	9.3	1.0	9.8	1.0	9.6	1.0
1979	- -	- -	- -	- -	- -	- -
1980	7.5	0.8	8.2	0.3	7.4	0.9
1981	7.3*	0.8*	8.1*	0.6*	7.5*	1.0*
1982	7.6*	1.1*	8.0*	1.1*	7.9*	1.2*

*Based on less than 6 samples
** MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Kennisis Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Kennisis Lake - 1982 Stn. A

Since 1972, there has been no significant change in water quality in Kennisis Lake. Average Secchi disc readings have remained consistently high ranging from 6.7 to 10.5 m. Average chlorophll a concentrations have remained low ranging from 0.7 to 1.4 ug/L. Water quality of Kennisis Lake is excellent for recreational use.

We hope that participation in this programme continues in 1983.

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Lake Joseph

Twp. of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake Joseph in 1982

Station	Yoho Is. A		Yoho Is. B		Cox Bay		S.E. of Badgerow Is. South Basin	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 3,4	--	--	--	--	6.5	0.7	6.1	0.5
July 21	9.0	0.7	9.0	0.8	- -	- -	- -	- -
Sept. 4,5	--	--	--	--	7.0	1.4	7.0	1.1
					6.8	1.1	6.6	0.8

Insufficient sampling was done in 1982 for any reliable conclusions to be made from the data. We recommend that sampling be done at least six times during the ice-free period.

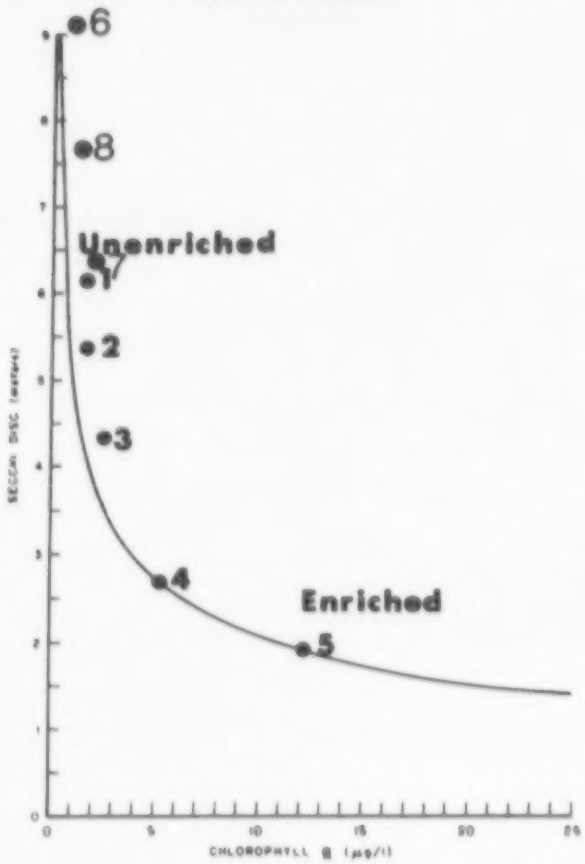
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake Joseph from 1977 to 1982

Station	J1 Yoho Is. A		J2 Yoho Is. B		J3 Cox Bay		J4 South Basin	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971								
1972								
1973								
1974								
1975								
1976								
1977	8.4	- -	8.6	- -	- -	- -	- -	- -
1978	8.4	1.1	8.5	1.1	- -	- -	- -	- -
1979	8.5	3.6	9.3	2.6	- -	- -	- -	- -
1980	7.6	- -	7.6	- -	- -	- -	- -	- -
1981	7.6*	1.4*	7.5*	1.4*	6.1	1.5	6.9	1.8
1982	9.0*	0.7*	9.0*	0.8*	6.8* (7.7**)	1.1* (1.3**)	6.6*	0.8*

* Based on less than 6 samples

** MOE - data

Figure 1: The relationship between Secchi disc and chlorophyll a for Lake Joseph and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Lake Joseph - 1982 North MOE data
7. Little L. Joseph - 1982
8. Cox Bay - 1982

A water quality survey of Lake Joseph was done by MOE in 1982. Since the initial MOE sampling program in 1969 and 1970, the degree of water transparency has increased slightly and densities of suspended algae have remained the same. Water quality in Lake Joseph continues to be excellent.

We hope that participation in this programme continues in 1983.

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TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake Joseph in 1982

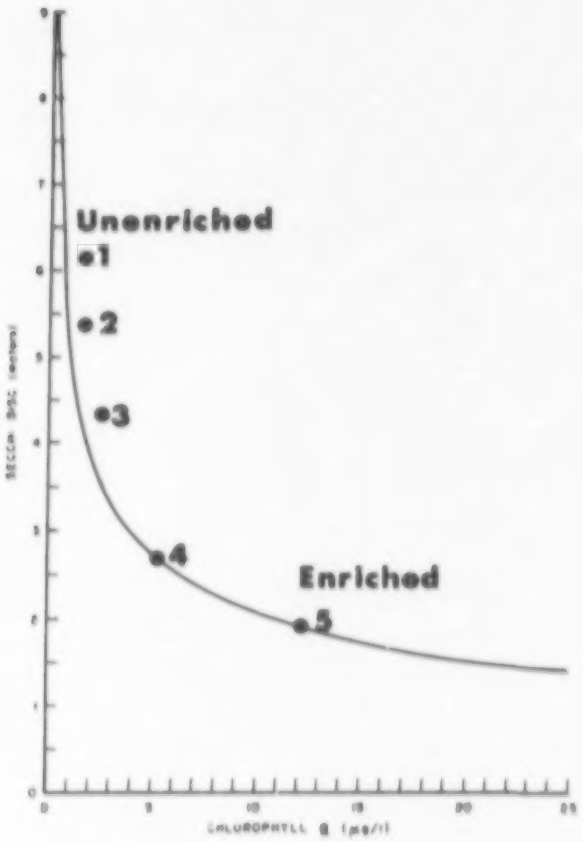
Station	E. of Chiefs Is. East Basin?		Gordon Bay		W. of Burnt. Is. North Basin ?		Little L. Joseph	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 3,4	6.8	AD	7.5	0.5	7.5	0.4	4.9	AD
Sept. 4,5	7.0	1.5	7.0	1.5	8.5	1.2	6.5	2.3
	6.9	1.5	7.2	1.0	8.0	0.8	5.7	2.3

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake Joseph from 1969 to 1982

Station	J5 East Basin		J6 Gordon Bay		J7 North Basin		J8 Lake	Little Joseph
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1969					8.1		5.8	
1970					8.2**	1.1**	5.8**	2.5**
1971								
1972								
1973								
1974					7.0*	0.7*		
1975					- -	- -		
1976					8.2*	1.4*	6.2*	2.2*
1977					8.3	- -	6.2	- -
1978					- -	- -	- -	- -
1979					- -	- -	- -	- -
1980					- -	- -	- -	- -
1981	6.7	1.5	5.8	1.7	6.6	1.6	4.9	1.8
1982	6.9*	1.5*	7.2*	1.0*	8.0**	0.8*	5.7*	2.3*
					(9.1**)	(1.0**)	(6.4**)	(2.1**)

* Based on less than 6 samples
** MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6.

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Lake Muskoka

Twp. of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake Muskoka in 1982

Station	North Basin		Bala Bay		Dudley Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
May 10	- -	- -	6.25	1.0	6.0	1.2
June 4	4.0	0.7	- -	- -	- -	- -
Aug. 2	5.5	1.0	- -	- -	- -	- -
Aug. 7	- -	- -	6.4	1.0	6.17	1.4
Sept. 5	5.0	1.1	- -	- -	- -	- -
Sept.26	- -	- -	6.0	1.1	5.25	1.0
	4.8	0.9	6.2	1.0	5.8	1.2

Insufficient sampling was done in 1982 for any reliable conclusions to be made from the data. We recommend that sampling be done at least six times during the ice-free period.

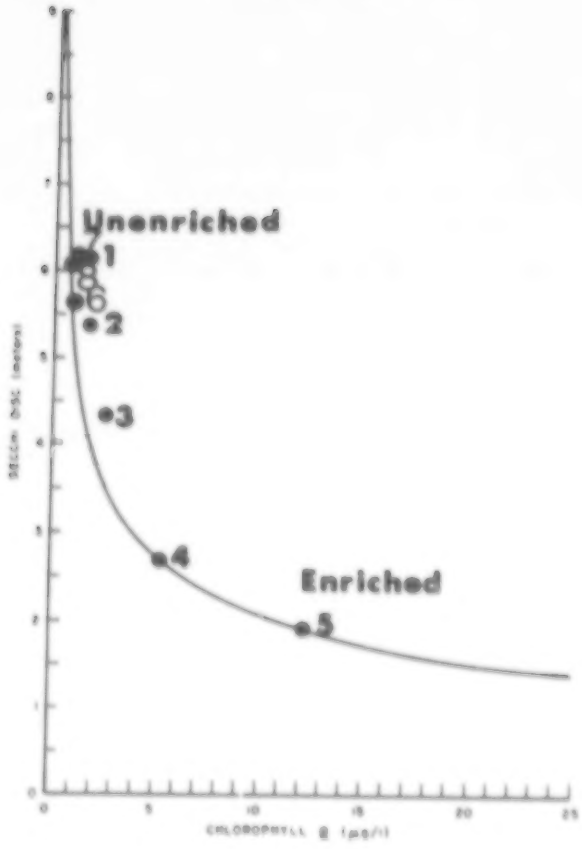
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake Muskoka in 1981 and 1982

Station	1 North Basin		3 Bala Bay		4 Dudley Bay	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1969					4.9*	
1970					5.1*	1.49*
1971						
1972						
1973						
1974						
1975						
1976						
1977						
1978						
1979						
1980						
1981	4.9**	1.0**	7.0	1.0	6.3	0.9
1982	4.8**(5.7*)	0.9**(1.0*)	6.2**	1.0**	5.8**(6.2*)	1.2**(1.1*)

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Lake Muskoka and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Lake Muskoka - 1982
   North Basin - MOE data
7. Dudley Bay - 1982
8. South Basin - 1982

A water quality survey of Lake Muskoka was done by MOE in 1982. Since the original sampling was done by MOE in 1969 and 1970, the degree of water transparency has increased slightly and densities of suspended algae have decreased slightly. Water quality continues to be excellent for recreational use.

We hope that participation in this programme continues in 1983.

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TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake Muskoka in 1982

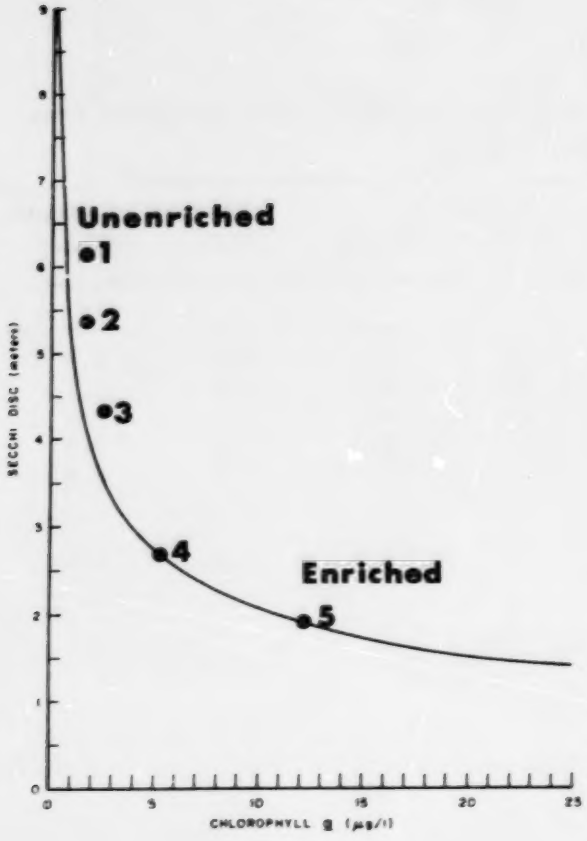
Station	North Bay		Muskoka R.		Eleanor Is. South	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
May 10	6.0	1.5	- -	- -	- -	- -
June 4	- -	- -	2.0	1.1	5.0	0.8
Aug. 2	- -	- -	3.5	0.9	4.5	1.1
Aug. 7	6.17	CS	- -	- -	- -	- -
Sept. 5	- -	- -	4.0	1.0	5.5	0.9
Sept.26	6.0	1.1	- -	- -	- -	- -
	6.1	1.3	3.2	1.0	5.0	0.9

CS - Contaminated sample

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake Muskoka in 1981 and 1982

Station	5 North Bay		7 Muskoka R.		8 South Basin	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972						
1973						
1974						
1975						
1976						
1977						
1978						
1979						
1980						
1981	6.7**	0.8	3.2**	1.2**	4.6**	0.9**
1982	6.1**	1.3**	3.2**	1.0**	5.0**(6.1*)	0.9**(1.0*)

Figure 1: The relationship between Secchi disc and chlorophyll a for and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6.

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Lake Rosseau

Twp. of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake Rosseau in 1982

Station	1. Arthurlie Bay		3. Skeleton Bay		6. Morgan Bay		8. West Basin off Mazengah?	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 3,4	6.0	0.8	5.0	0.6	6.0	0.6	6.5	0.7
Aug. 2	5.0	0.8	6.25	1.1	5.0	1.2	5.25	1.0
Sept. 6	4.0	1.9	- -	- -	- -	- -	4.75	1.8
Sept.26	- -	- -	4.5	1.2	5.25	1.6	- -	- -
	5.0	1.2	5.3	1.0	5.4	1.1	5.5	1.2

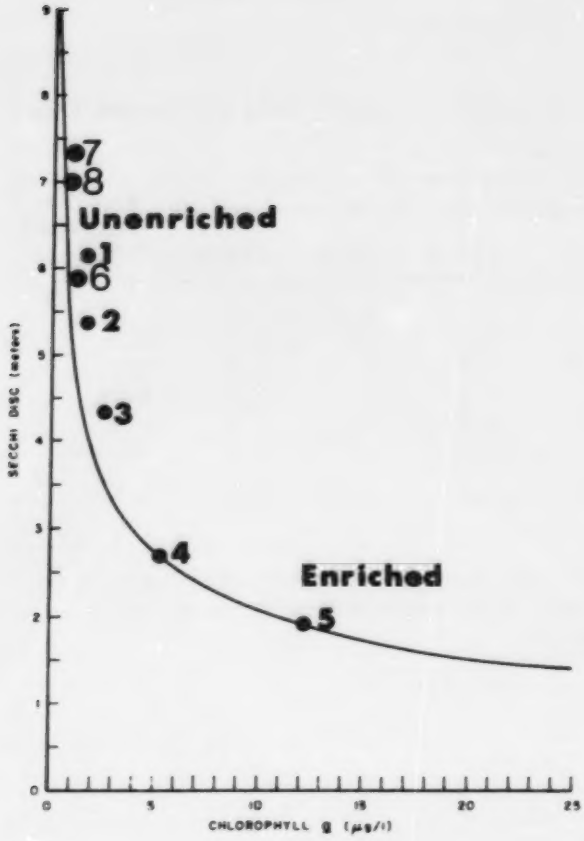
Insufficient sampling was done in 1982 for any reliable conclusions to be made from the data. We recommend that sampling be done at least six times during the ice-free period.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake Rosseau from 1969 to 1982

Station	1 Arthurlie		3 Skeleton		6 Morgan		8 West Basin	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1969			5.0**				6.0**	
1970			5.3**	1.5**			6.3**	1.7**
1971								
1972								
1973								
1974							6.4	0.7
1975								
1976							6.1	1.8
1977			4.8	- -			4.8	- -
1978			6.2	1.5			6.2	1.5
1979			- -	- -			- -	- -
1980			- -	- -			- -	- -
1981	6.2	1.2	4.5*	0.8*	5.9	0.8	6.8*	1.0*
1982	5.0*	1.2*	5.3*	1.0*	5.4*	1.1*	5.5*	1.2*
			(5.9**)	(1.2**)			(7.3**)	(1.1**)

* Based on less than 6 samples
** MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Lake Rosseau and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Lake Rosseau - 1982
   MOE data
   Skeleton Bay
7. West Basin
8. North Basin

A water quality survey of Lake Rosseau was done by MOE in 1982. Since the initial MOE sampling programme in 1969 and 1970, the degree of water transparency and densities of suspended algae have remained relatively unchanged in Lake Rosseau. Water quality continues to be excellent.

We hope that participation in this programme continues in 1983.

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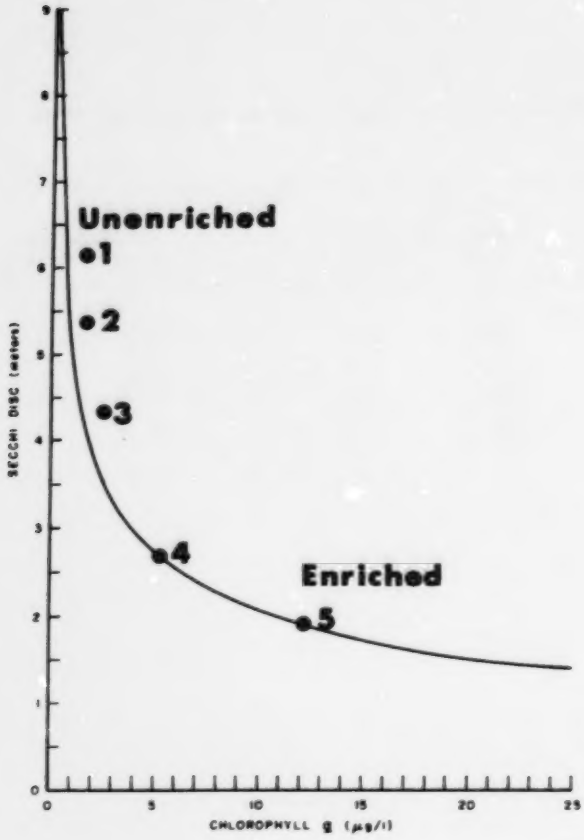
TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake Rosseau

Station	11. South Basin		12. North Basin		13. Portage Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 3, 4	5.5	0.6	5.2	0.6	7.0	0.6
Aug. 2	6.0	1.0	5.0	1.2	5.5	0.9
Sept. 6	4.75	1.9	5.0	1.3	5.0	1.9
	5.4	1.2	5.1	1.0	5.8	1.1

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake Rosseau

Station	11. South Basin		12. North Basin		13. Portage Bay	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972						
1973						
1974						
1975						
1976						
1977						
1978						
1979						
1980						
1981	8.0*	1.0*	6.5*	1.2*		
1982	5.4*	1.2*	5.1* (7.0**)	1.0* (0.9**)	5.8*	1.1*

Figure 1: The relationship between Secchi disc and chlorophyll a for and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6.

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Lake Scugog

Scugog Township

Region of Durham

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake Scugog in 1982

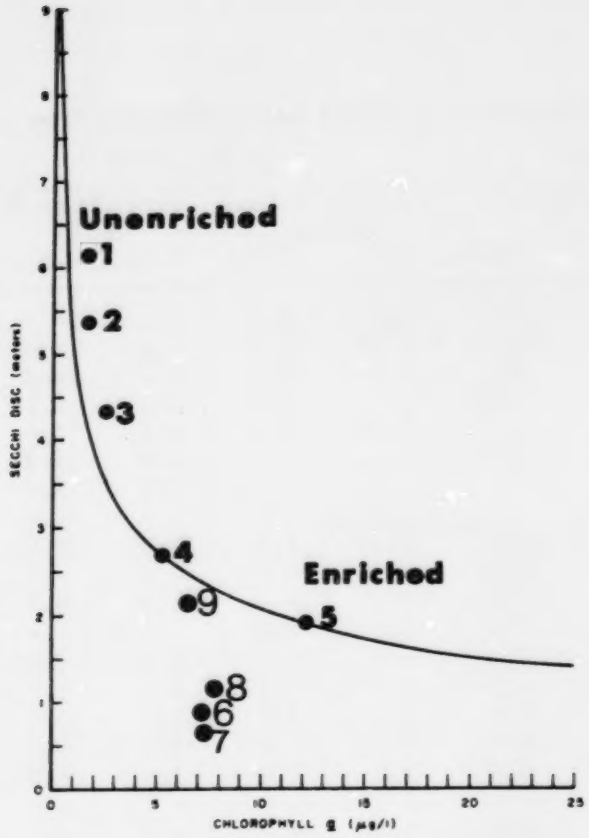
Station	Williams Point (S-13)		Scugog Pt. (S-12)		7 Mile Island (S-14)		West Shore South End (S-15)	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
May 30	1.0	7.3	.75	7.2	1.0	8.5	- -	- -
June 6	- -	- -	.80	10.1	1.25	6.8	- -	- -
June 13	.70	6.9	.75	9.0	1.0	9.8	2.1	8.3
June 20	- -	- -	.75	8.2	- -	- -	1.5	5.1
June 27	1.1	4.6	1.0	4.1	1.25	7.3	2.1	5.6
July 4	1.0	6.4	.75	7.0	- -	- -	2.5	4.8
July 11	.75	7.7	- -	- -	- -	- -	2.2	4.4
July 18	- -	- -	.60	7.0	- -	- -	- -	- -
July 25	- -	- -	.60	10.0	1.0	9.7	2.3	6.8
Aug. 1	- -	- -	.60	8.9	- -	- -	- -	- -
Aug. 9	.65	9.0	.75	7.6	- -	- -	1.8	9.7
Aug. 15	1.0	6.6	.65	7.1	1.0	8.3	- -	- -
Aug. 22	- -	- -	.62	7.8	- -	- -	1.9	7.6
Aug. 29	- -	- -	.67	6.1	1.0	5.5	2.6	7.4
Sept. 5	- -	- -	.67	6.0	1.0	4.9	2.1	4.7
Sept.12	- -	- -	.75	4.1	- -	- -	3.1	5.3
Sept.19	.90	6.2	.60	6.6	1.0	8.4	2.6	9.7
Sept.26	- -	- -	.75	- -	- -	- -	- -	- -
Oct. 3	.78	10.1	.66	6.8	1.0	9.7	- -	- -
	0.9	7.2	0.7	7.3	1.1	7.9	2.2	6.6

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake Scugog from 1972 to 1982

Station	Williams Point (S-13)		Scugog Pt. (S-12)		7 Mile Island (S-14)		West Shore South End (S-15)	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971								
1972 *	0.8	19.2	0.7	13.2	0.8	15.5	0.9	16.6
1973								
1974								
1975								
1976 *	0.7	14.2					0.8	14.3
1977								
1978								
1979								
1980								
1981								
1982	0.9	7.2	0.7	7.3	1.1	7.9	2.2	6.6

* MOE data from approximately the same location

Figure 1: The relationship between Secchi disc and chlorophyll a for Lake Scugog and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Lake Scugog - 1982 Williams Point
7. Scugog Point - 1982
8. 7 Mile Is. - 1982
9. West Shore - 1982

Despite the continued high algal density in 1982 a comparison of results of previous sampling by MOE staff indicated that a significant reduction in the "standing crop" of suspended algae has apparently occurred in Scugog Lake. Continued participation in the sampling program is encouraged to determine long term trends.

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TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from

Station

Date

Congratulations on an excellent sampling program for the first year! Relatively little fluctuation in the values shown in Table 1 is evident over the sampling period. There is a general lack of correspondence between water clarity and algal density at the first three sampling sites which probably relates to the resuspension of sediment in the shallow lake. More correspondence between algal density and water clarity is evident at the fourth site which may have been more protected from wind induced wave action. Based on the average values for the sites Scugog Lake is considered enriched with poor water clarity and high algal density.

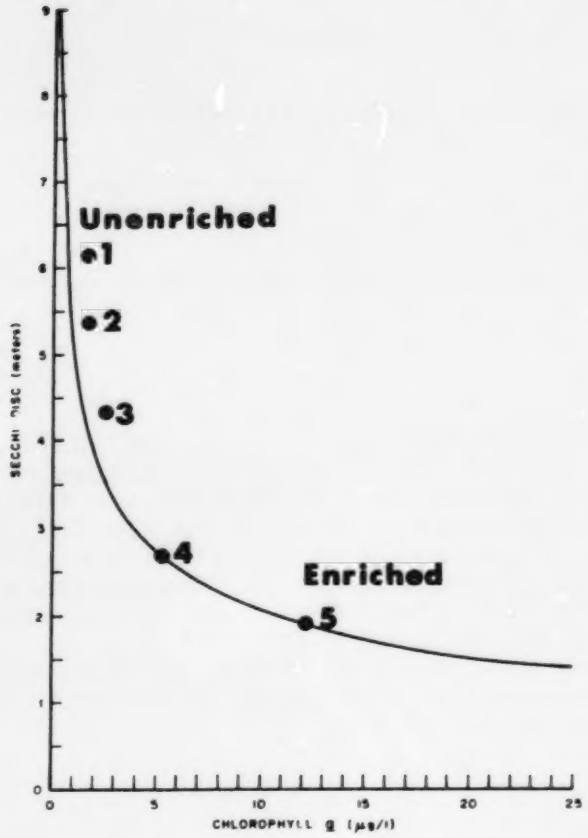
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from

Station

Year

1971
1972
1973
1974
1975
1976
1977
1978
1979
1980

Figure 1: The relationship between Secchi disc and chlorophyll a for and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6.

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Lake of Bays

Township of Lake of Bays

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake of Bays in 1982

Station	2 Trading Bay		5 E. Bigwin		6 Haystack Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 4	5.0	1.4	5.0	1.3	5.0	0.9
July 18	6.0	1.6	6.0	1.4	6.5	1.2
Aug. 2	5.0	1.5	6.0	1.0	5.0	1.2
Sept. 2	7.0	1.3	6.0	1.5	6.0	1.4
	5.8	1.5	5.8	1.3	5.6	1.2

AD - anomalous data withdrawn at lab

In 1982, Secchi disc readings ranged from 4.5 to 7.0 m and chlorophyll a concentrations ranged from 0.8 to 1.6 ug/L. In general, water quality was very similar at all stations. Based on seasonal averages, Lake of Bays would be considered unenriched, characterized by a high degree of water transparency and low densities of suspended algae.

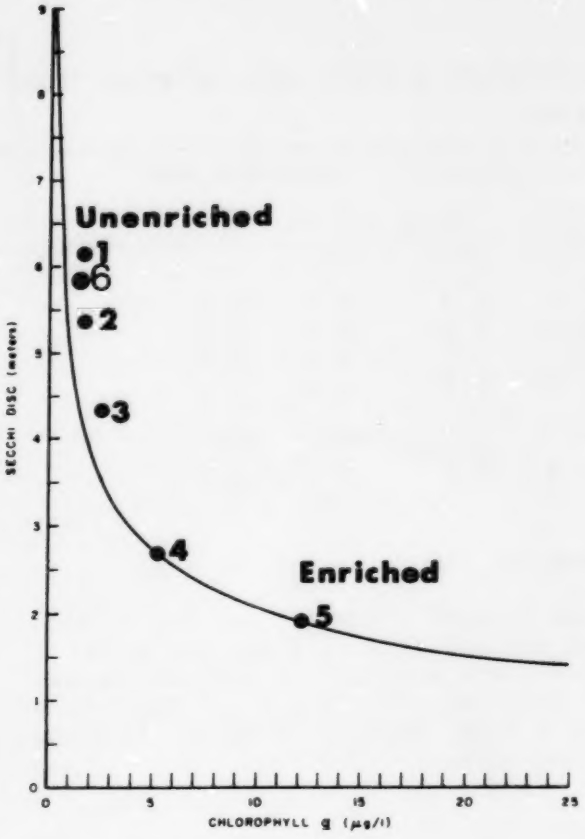
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake of Bays from 1977 to 1982

Station	2		5		6		7		10		12	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971												
1972												
1973												
1974												
1975												
1976												
1977	7.5	—	7.0	—	6.3	—	7.4	—	6.1	—	6.5	—
1978	8.0*	1.3*	7.2	1.3	7.1	1.5	6.9	1.1	7.4	1.7	6.0	1.2
1978**	6.4	1.5	6.6	1.5	6.2	1.5	6.1	1.4	6.1	1.3	5.3	1.4
1979	6.2	1.7	6.6	1.6	6.3	2.0	6.4	1.3*	6.2	1.6	5.6	1.5
1980	7.2	1.4	7.2	1.4	7.0	1.4*	7.1	1.3	6.6	1.4	5.6	1.4
1981	5.5*	1.2*	5.5*	1.3*	6.3	1.1	6.0*	1.0*	5.3*	0.9*	5.5*	1.0*
1982	5.8*	1.5*	5.8*	1.3*	5.6*	1.2*	6.3*	1.3*	5.8*	1.1*	5.1*	1.2*

* Based on less than 6 samples

** MOE survey

Figure 1: The relationship between Secchi disc and chlorophyll a for Lake of Bays and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Lake of Bays - 1982 Stn. 5

Since 1977, the degree of water transparency appears to be decreasing gradually, however, the densities of suspended algae have not increased over that period. The reason for the decreasing water transparency in 1981 and 1982 is not apparent. It could be due to the decrease in the number of readings taken in the past 2 years. Water quality remains excellent for recreational use.

We hope that participation in this programme continues in 1983.

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Lake of Bays

Township of Lake of Bays

District Municipality of Muskoka

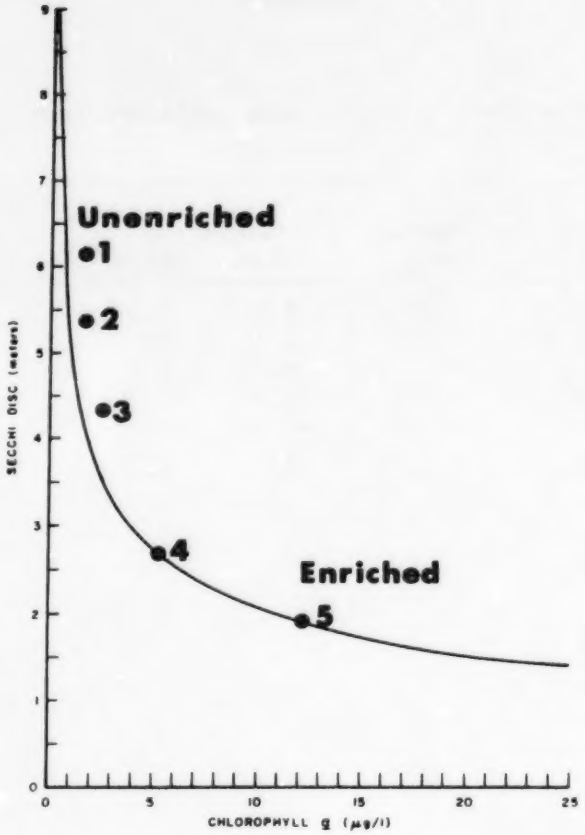
TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake of Bays in 1982

Station	7 Fairview Channel		10 Gull Is. Channel		12 Dwight Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 4	5.5	1.3	5.0	1.1	4.5	1.3
July 18	6.0	1.6	6.0	1.1	6.0	AD
Aug. 2	6.5	0.8	6.0	1.1	4.5	1.1
Sept. 2	7.0	1.4	6.0	1.2	5.5	1.2
	6.3	1.3	5.8	1.1	5.1	1.2

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from

Station	
Year	
1971	
1972	
1973	
1974	
1975	
1976	
1977	
1978	
1979	
1980	

Figure 1: The relationship between Secchi disc and chlorophyll a for and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6.

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Lake St. John

Rama Township

Simcoe County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Lake St. John in 1982

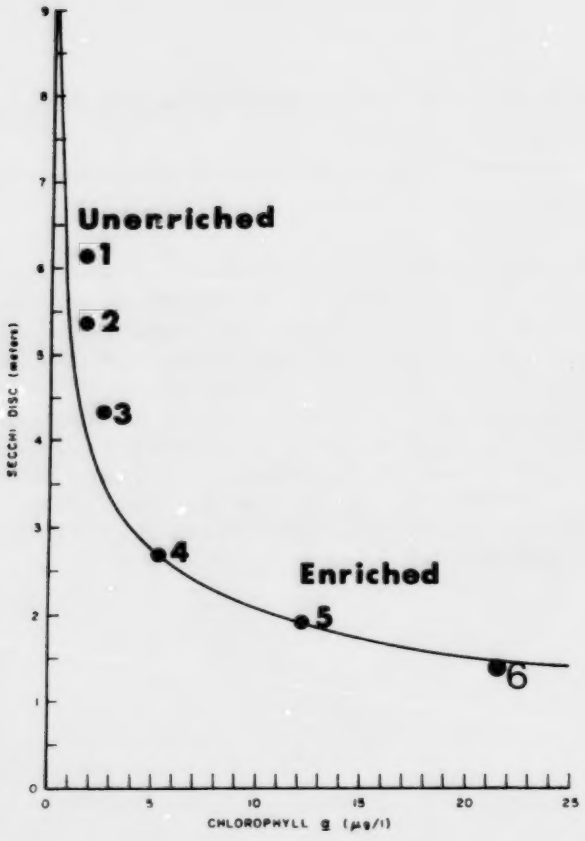
Station	Main	
Date	S.D.	Chl.a
June 17	2.0	7.8
June 27	2.0	4.9
July 18	1.0	25.6
Aug. 3	1.0	25.4
Aug. 15	1.25	25.2
Sept. 6	1.0	38.0
	1.4	21.2

In 1982, the Secchi disc readings ranged from 1.0 to 2.0 ug/L and chlorophyll a concentrations ranged from 4.9 to 38.0 ug/L. From July to Sept. there were high densities of suspended algae present in the lake. Based on the seasonal averages, Lake St. John would be considered enriched, characterized by a low degree of water transparency and extremely high densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Lake St. John from 1979 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978		
1979	1.9	12.1
1980	2.0	20.4
1981	2.4	10.0
1982	1.4	21.2

Figure 1: The relationship between Secchi disc and chlorophyll a for Lake St. John and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Lake St. John - 1982

Since 1979, the degree of water transparency in Lake St. John has remained consistently low while densities of suspended algae have fluctuated. Water quality is poor for recreational use. Because of the shallow nature of Lake St. John (maximum depth 25 feet) and the lack of flushing during the summer, nutrients and sunlight can combine to provide ideal conditions for algae growth.

We hope that participation in this programme continues in 1983.

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Leech Lake

Oakley Ward

Town of Bracebridge

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Leech Lake in 1982

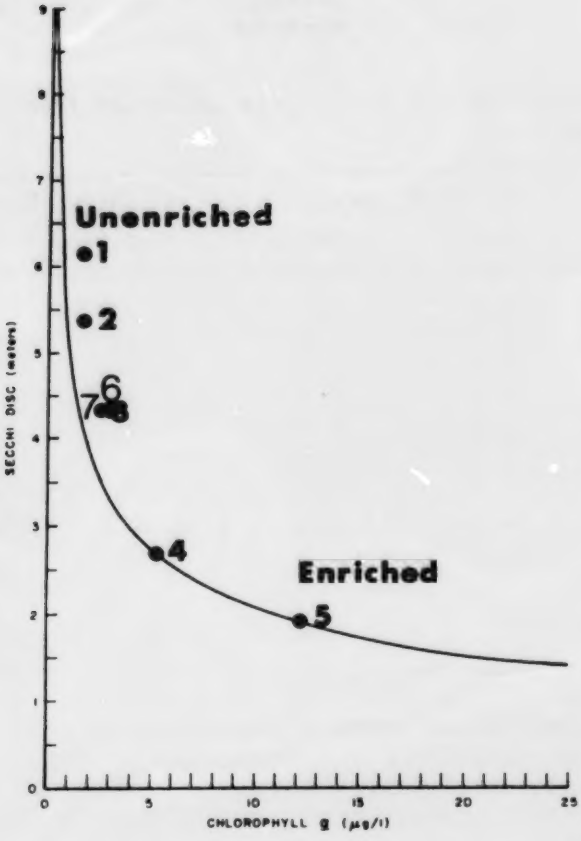
Station	A. North Bay		B. East Bay		C. West Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
June 13	4.25	6.2	4.0	2.7	4.25	3.5
June 20	3.5	3.4	3.75	2.8	3.75	2.9
June 27	4.25	2.5	4.0	3.0	- -	- -
July 4	3.75	3.0	4.0	2.7	- -	- -
July 25	4.25	2.3	4.0	1.5	4.0	2.4
Aug. 15	4.75	1.5	5.0	2.4	6.0	2.0
Aug. 29	5.0	2.3	5.0	2.9	5.5	2.4
	4.3	3.0	4.3	2.6	4.7	2.6

In 1982, the Secchi disc readings ranged from 3.5 to 6.0 m and chlorophyll a concentrations ranged from 1.5 to 6.2 ug/L. The highest densities of suspended algae were observed in North Bay on June 13. Based on the seasonal averages, Leech Lake would be considered moderately enriched, characterized by a moderately high degree of water transparency and moderate densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Leech Lake from 1977 to 1982

Station	A North Bay		B East Bay		C West Bay	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972						
1973						
1974						
1975						
1976						
1977	5.4	- -	5.0	- -	5.4	- -
1978	3.8	4.5	4.1	4.4	4.0	5.1
1979	4.6	4.0	4.8	4.5	5.0	6.5
1980	4.2	4.0	4.0	4 2	4.6	5.8
1981	4.6	3.0	4.6	3.5	4.7	3.8
1982	4.3	3.0	4.3	2.6	4.7	2.6

Figure 1: The relationship between Secchi disc and chlorophyll a for Leech Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Leech Lake - 1982 North Bay
7. East Bay - 1982

Since 1977, there have been no significant changes in average Secchi disc readings however, average chlorophyll a concentrations in 1981 and 1982 have decreased slightly. Water quality remains good for recreational use. We congratulate the cottagers on an excellent sampling program in 1982.

We hope that participation in this programme continues in 1983.

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Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Little Kennisis Lake

Havelock Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Little Kennisis Lake in 1982

Station / Date	M S.D.	Chl.a
June 20	4.5	2.0
July 4	4.0	1.4
July 19	4.0	1.2
Aug. 8	5.0	1.6
Aug. 29	5.5	1.3
	4.6	1.5

In 1982, Secchi disc readings ranged from 4.0 to 5.5 m and chlorophyll a concentrations ranged from 1.2 to 2.0 ug/L. Based on the information available, Little Kennisis Lake would be considered unenriched, characterized by a moderately high degree of water transparency and low densities of suspended algae.

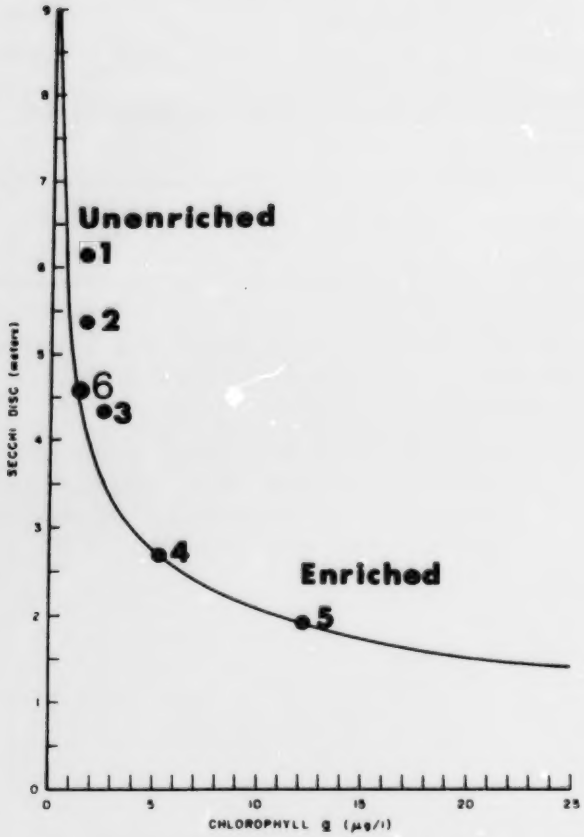
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Little Kennisis Lake from 1972 to 1982

Station / Year	M S.D.	Chl.a
1971		
1972	4.5*	1.6*
1973	4.8	1.1
1974	5.3	1.1
1975	5.5	1.0
1976	5.3*	2.0*
1977	6.3(6.3**)	- -
1978	5.5	1.4
1979	- -	- -
1980	4.2	1.7
1981	4.8*	1.4*
1982	4.6*	1.5*

* Based on less than 6 samples

** MOE Data

Figure 1: The relationship between Secchi disc and chlorophyll a for Little Kennisis Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Little Kennisis Lake - 1982

Since 1972, the average Secchi disc readings have ranged from 4.5 m in 1972 to 6.3 m in 1977 then back to 4.2 m in 1980. This degree of fluctuation is within the range natural annual variations and variations due to sampling technique. Average chlorophyll a concentrations have remained consistently low.

In general water quality remains very good for recreational use.

We hope that participation continues in 1983.

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Little Straggle Lake

Harcourt Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Little Straggle Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 28	3.8	2.7
July 4	4.0	2.7
July 18	4.1	2.4
Aug. 8	4.0	3.4
	4.0	2.8

In 1982, the Secchi disc readings ranged from 3.8 to 4.1 m and chlorophyll a concentrations ranged from 2.4 to 3.4 ug/L. Based on the information available, Little Straggle Lake would be considered moderately enriched, characterized by a moderate degree of water transparency and moderately low densities of suspended algae.

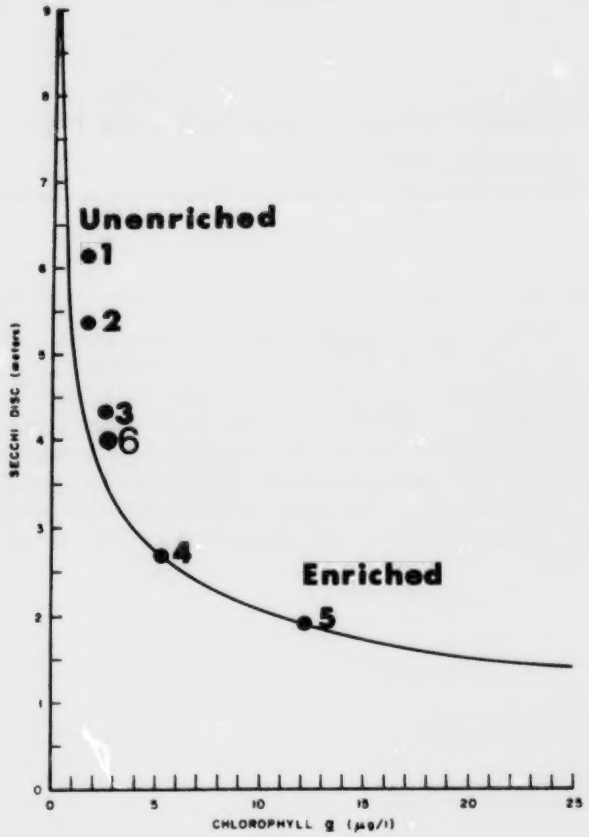
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Little Straggle Lake from 1973 to 1982

Station	Main		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973	3.8**	2.9**		
1974	3.6	1.6		
1975	5.3	2.4		
1976	4.1	2.2		
1977	5.3	- -	4.5*	- -
1978	4.6	2.4		
1979	4.3	4.0		
1980	4.9	3.9		
1981	5.3	2.8		
1982	4.0	2.8		

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Little Straggle Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Little Straggle Lake - 1982

Since 1973, there has been no noticeable change in water quality in Little Straggle Lake.

We hope that participation in this programme continues in 1983.

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Long Lake

Dudley Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Long Lake in 1982

Station	(1) West	
Date	S.D.	Chl.a
July 4	5.0	6.4
Aug. 15	5.5	2.4
	5.3	4.4

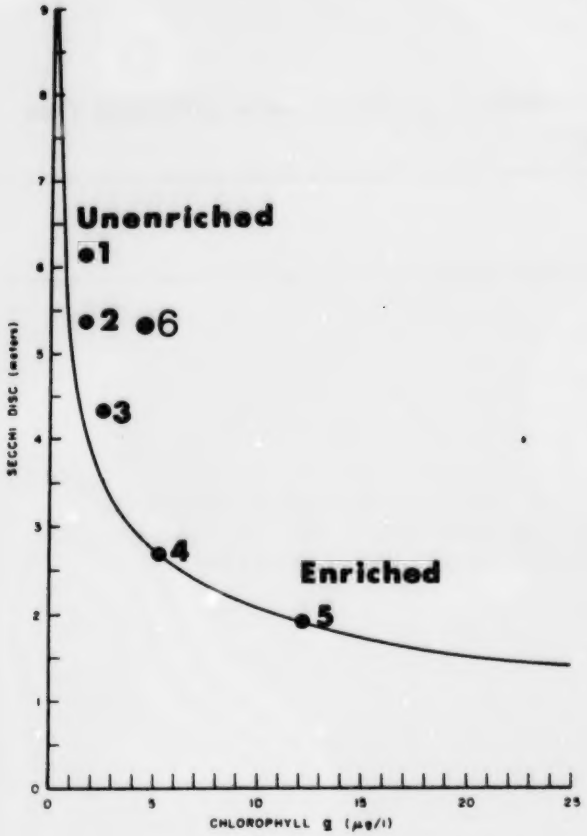
Insufficient sampling was done in 1982 to make reliable conclusions regarding the water quality. We recommend that six samples be taken throughout the ice-free period.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Long Lake from 1977 to 1982

Station	1. West	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977	5.6	- -
1978	6.3*	5.0*
1979	5.6	5.7
1980	4.9	6.6
1981	5.3	3.7
1982	5.3*	4.4*

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Long Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Long Lake - 1982

We hope that participation in this programme continues next year with an increase in sampling frequency.

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Loon Lake

Dysart Township

Haliburton County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Loon Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 6	4.75	LA
June 20	5.8	1.1
July 4	7.2	0.9
Aug. 2	5.2	2.2
Aug. 22	4.8	1.6
Sept. 5	5.2	1.5
	5.5	1.5

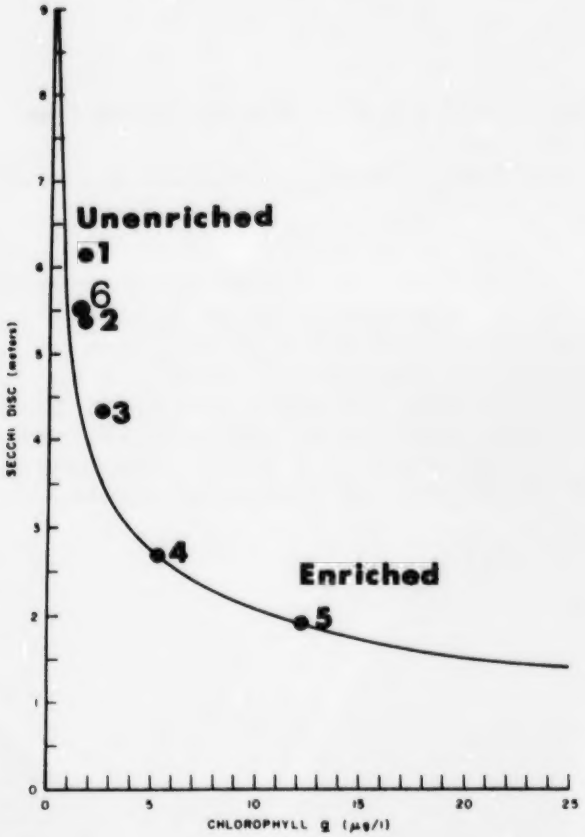
In 1982, the Secchi disc readings ranged from 4.75 to 7.2 m and chlorophyll a concentrations ranged from 0.9 to 2.2 ug/L. Based on the seasonal averages, Loon Lake would be considered unenriched, characterized by a high degree of water transparency and low densities of suspended algae.

LA - lab accident

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Loon Lake from 1979 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978		
1979	4.8	1.8
1980	4.4	2.3
1981	5.6*	1.6*
1982	5.5	1.5

Figure 1: The relationship between Secchi disc and chlorophyll a for Loon Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Loon Lake - 1982

There has been no significant change in water quality of Loon Lake since 1979. Water quality remains very good for recreational use.

We hope that participation in this programme continues in 1983.

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Looncall Lake

Township of Burleigh

County of Peterborough

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Looncall Lake in 1982

Station	23 East		48 West	
Date	S.D.	Chl.a	S.D.	Chl.a
May 26	4.5	2.9	5.0	2.9
June 7	4.0	3.3	4.0	2.8
June 26	3.75	2.7	3.5	2.4
July 11	3.75	2.7	4.0	2.2
July 27	4.0	3.2	4.0	2.0
Aug. 8	4.0	2.6	3.5	2.1
Sept. 7	- -	2.5	- -	2.6
	4.0	2.8	4.0	2.4

Water clarity continues to remain relatively stable. Seasonal changes in algal density were not as pronounced as those of 1981. Based on the mean values for the two parameters Looncall Lake was considered moderately enriched with moderate algal densities.

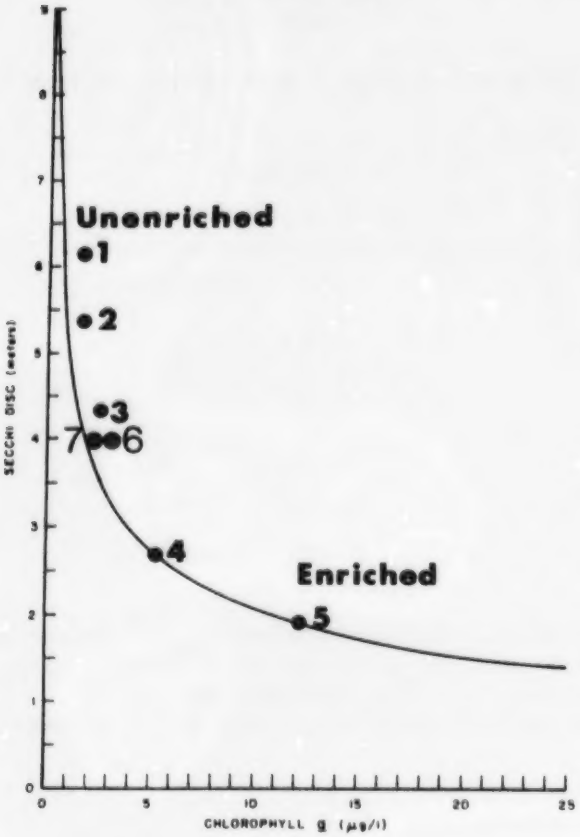
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Looncall Lake from 1971 to 1982

Station	23 East		48 West	
Year	S.D.	Chl.a	S.D.	Chl.a
* 1971				
1972			4.5	1.5
1973				
* 1974				
* 1975			3.4	1.6
* 1976			3.5	1.6
1977			3.2	3.9
1978	5.5		4.2	- -
1979			4.0	1.1
1980	4.2	2.6	3.9	3.0
** 1980	3.9	2.4	4.2	2.7
1981	4.3	3.1	4.1	2.2
1982	4.0	2.8	4.2	2.6
			4.0	2.4

* Main Lake station

** Samples taken at similar locations by MOE staff

Figure 1: The relationship between Secchi disc and chlorophyll a for Looncall Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Looncall Lake - 1982 - Stn. 23
7. Looncall Lake - 1982 - Stn. 48

There is little difference in the enrichment status of the lake over the last five years. Looncall Lake appears to have relatively stable water quality. Continued participation in the sampling program is encouraged to determine long term trends.

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Mary Lake

Stephenson & Brunel Wards

Town of Huntsville

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Mary Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 29	3.8	1.1
July 7	4.0	1.2
July 26	4.0	1.9
Aug. 9	3.7	1.7
Aug. 23	4.0	2.0
Sept. 7	4.3	1.3
	4.0	1.5

In 1982, the Secchi disc readings ranged from 3.7 to 4.3 m and chlorophyll a concentrations ranged from 1.1 to 2.0 ug/L. The water transparency is lower than expected due to the natural brown colouration of the water.

Based on the seasonal averages, Mary Lake would be considered unenriched, characterized by a moderately high degree of water transparency and low densities of suspended algae.

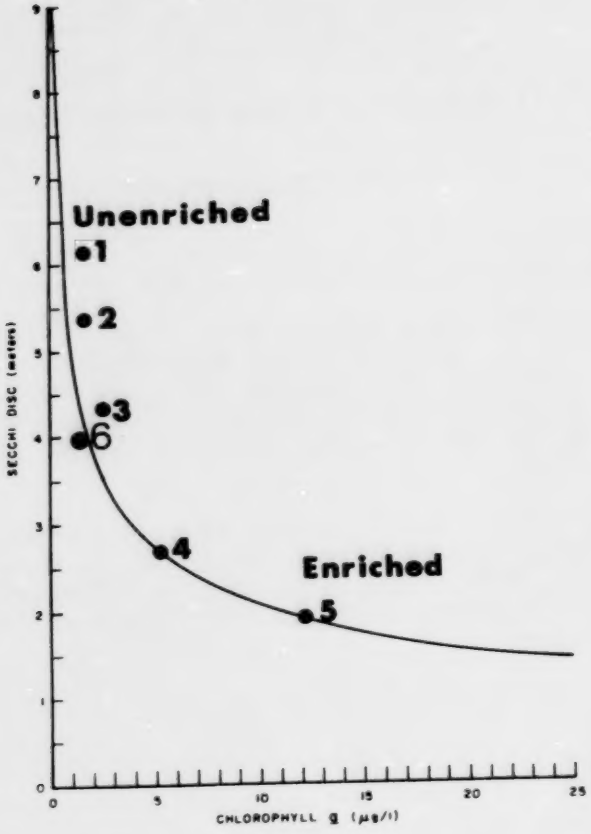
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Mary Lake from 1974 to 1982

Station		
Year		
1971		
1972		
1973		
1974	4.5**	1.7**
1975	3.8	1.7
1976	4.1	2.3
1977	4.3	- -
1978	4.2 (3.1*)	2.5** (2.5*)
1979	4.3**	1.6**
1980	4.1	1.8
1981	4.3**	1.9**
1982	4.0	1.5

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Mary Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Mary Lake - 1982

Since 1974, there has been no noticeable change in water quality in Mary Lake. Water quality remains very good for recreational use. Average Secchi disc readings and chlorophyll a concentrations have shown very little fluctuation.

We hope that participation in this programme continues in 1983.

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Medora Lake

Medora Ward

Township of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Medora Lake in 1982

Station	1	
Date	S.D.	Chl.a
June 3	3.5	2.2
June 13	3.5	2.2
July 4	3.5	2.4
July 17	5.0	2.9
July 24	4.5	2.7
Aug. 1	4.5	5.0
Aug. 15	4.5	13.6
Sept.26	4.5	AD
	4.2	4.4

In 1982, the Secchi disc readings ranged from 3.5 to 5.0 m and chlorophyll a concentrations ranged from 2.2 to 13.6 ug/L. On Aug. 15 high concentrations of chlorophyll a were observed increasing the seasonal average considerably. Based on the seasonal averages, Medora Lake would be considered moderately enriched, characterized by a moderately high degree of water transparency and high densities of suspended algae.

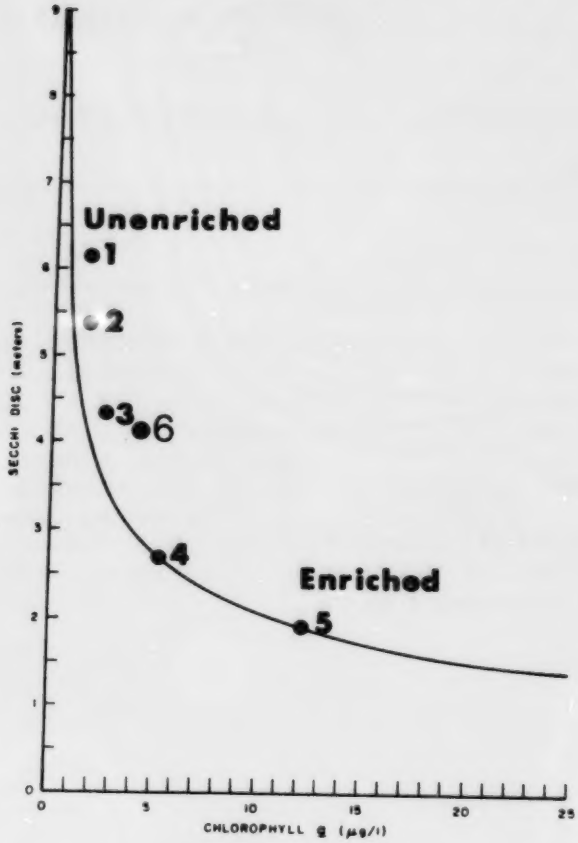
AD - anomalous data withdrawn at lab

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Medora Lake from 1974 to 1982

Station	1	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974	3.7	2.0
1975	4.1	9.0
1976	- -	- -
1977	4.1*	- -
1978	3.6*	3.3*
1979	4.9*	7.1*
1980	6.0	8.6
1981	3.6	3.3
1982	4.2	4.4

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Medora Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Medora Lake - 1982

Since 1974, the average Secchi disc readings have ranged from 3.6 to 6.0 m and average chlorophyll a concentrations have ranged from 2.0 to 9.0 ug/L. Medora Lake is subject to periodic blooms of algae in the summer which account for the fluctuations in average annual chlorophyll a concentrations.

We hope that participation in this programme continues in 1983.

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Miskwabi Lake

Dudley Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Miskwabi Lake in 1982

Station	#6 West		#13 East	
Date	S.D.	Chl.a	S.D.	Chl.a
May 30	- -	- -	6.5	1.4
June 6	- -	- -	6.5	0.8
June 13	- -	- -	4.5	2.2
July 4	- -	- -	5.75	1.9
July 18	- -	- -	5.5	0.6
Aug. 8	- -	- -	6.25	1.3
Aug. 15	- -	- -	6.25	1.7
Aug. 22	8.0	1.6	- -	- -
Sept. 6	8.0	1.6	- -	- -
	8.0	1.6	5.9	1.4

Insufficient sampling was done at Stn. 6 to make comments regarding water quality. At Stn. 13 in 1982, Secchi disc. readings ranged from 4.5 to 6.5 m and chlorophyll a concentrations ranged from 0.6 to 2.2. ug/L. Based on the seasonal averages, Miskwabi Lake would be considered unenriched, characterized by a high degree of water transparency and low densities of suspended algae.

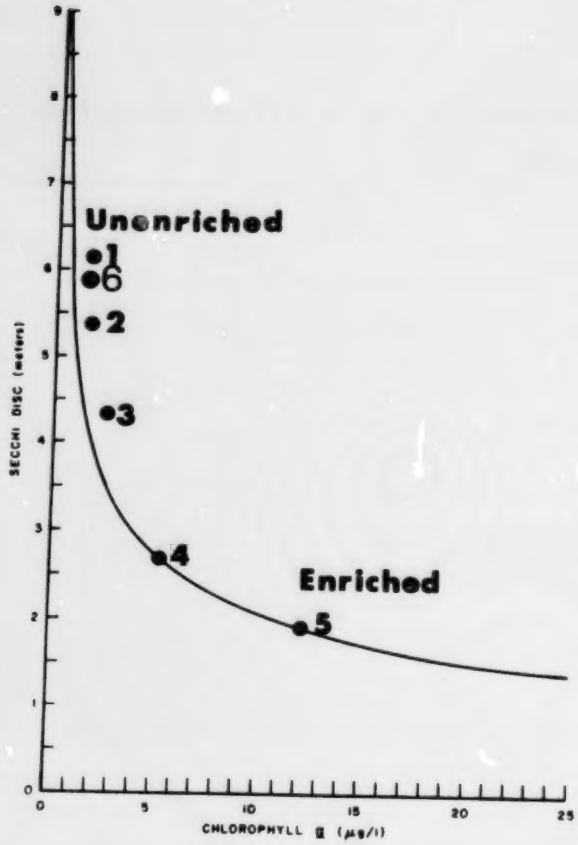
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Miskwabi Lake from 1975 to 1982

Station	6 West		13 East	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973				
1974				
1975	7.7*	1.6*	7.0*	1.6*
1976	6.4	1.6	5.6	2.2
1977	7.9	- -	5.9	- -
1978	6.5	1.5	5.8	2.1
1979	6.6**	1.7**	5.6	2.0
1980	6.6**	2.5**	5.8	2.2
1981	6.5**	1.5**	6.0	1.6
1982	8.0**	1.6**	5.9	1.4

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Miskwabi Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Miskwabi Lake - 1982 Stn. 13

Since 1975, there has been no noticeable change in the water quality of Miskwabi Lake. Water quality remains very good for recreational use.

We hope that participation in this programme continues in 1983.

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Moot Lake

McLean Ward

Twp. of Lake of Bays

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Moot Lake in 1982

Station	South End	
Date	S.D.	Chl.a
July 11	2.0	10.2
Aug. 5	1.5	7.8
	1.8	9.0

Insufficient sampling was done in 1982 to make any reliable conclusions regarding water quality. We recommend that sampling be done at least six times during the ice-free period. Results of an MOE survey of Moot Lake in 1981 indicate that Moot Lake would be considered enriched, characterized by a low degree of water transparency and high densities of suspended algae. Moot Lake has a distinct brown colouration which decreases the water transparency.

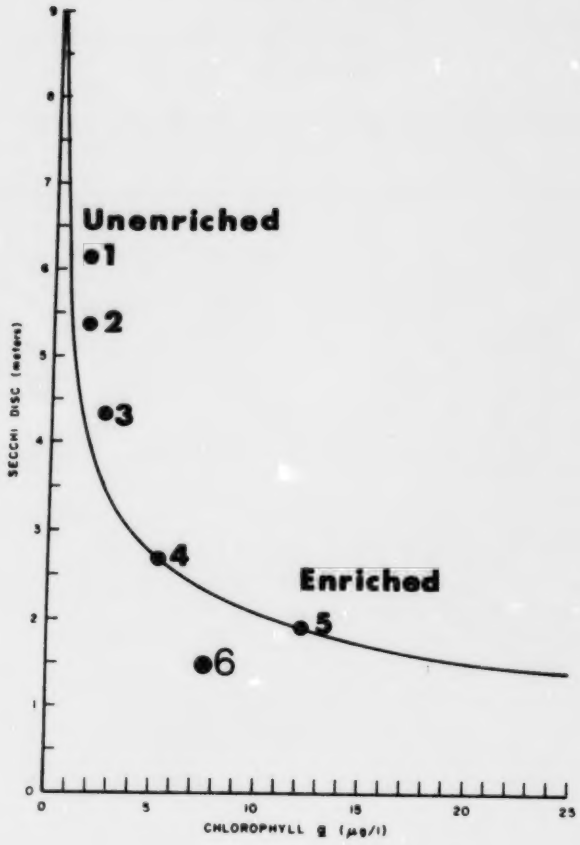
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from

Station	South End	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978		
1979		
1980		
1981	1.5*	7.4*
1982	1.8**	9.0**

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Moot Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Moot Lake - 1981 MOE data

We hope that participation in this programme continues in 1983 with an increase in sampling frequency.

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Mountain Lake

Minden Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Mountain Lake in 1982

Station	South		North	
Date	S.D.	Chl.a	S.D.	Chl.a
May 24	4.25	2.0	5.25	2.1
June 13	6.74	1.7	5.0	0.8
June 27	4.5	1.2	5.5	1.3
July 4	6.25	1.5	6.0	1.4
July 11	3.75	1.5	4.5	1.5
July 18	5.0	AD	4.75	AD
July 25	4.75	1.3	4.75	1.5
Aug. 2	5.0	1.7	3.25	2.2
Aug. 8	5.0	1.8	4.5	2.0
Aug. 15	6.0	2.0	5.5	1.9
Aug. 22	4.25	1.6	4.5	1.0
Aug. 29	5.0	2.4	5.25	2.4
Sept. 6	4.5	2.4	4.5	1.9
	5.0	1.8	4.9	1.7

Once again, an excellent sampling program was done on Mountain Lake in 1982. Water quality at both stations was very good. Secchi disc readings ranged from 3.25 to 6.75 m and chlorophyll a concentrations ranged from 0.8 to 2.4 ug/L. Based on the seasonal averages, Mountain Lake would be considered unenriched, characterized by a high degree of water transparency and low densities of suspended algae.

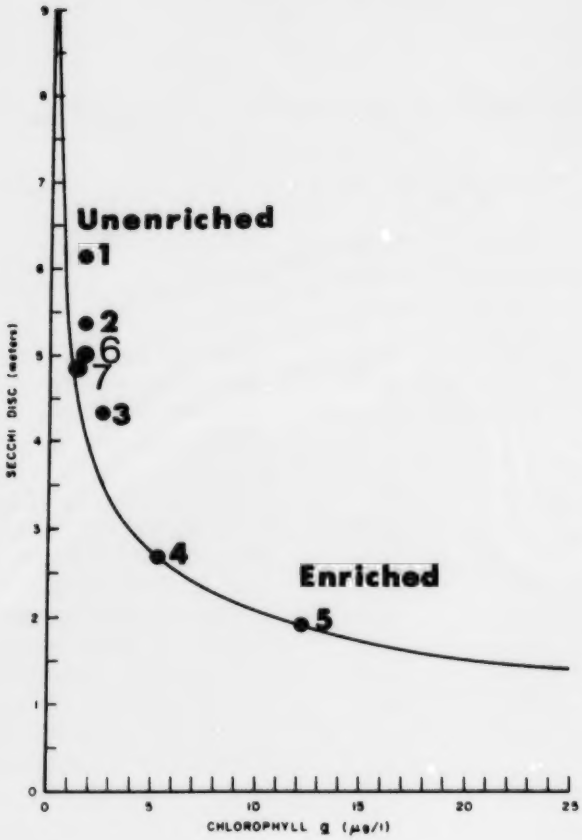
AD - Anomalous data withdrawn at lab.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Mountain Lake from 1979 to 1982

Station	South		North	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973	5.8*	1.8*		
1974				
1975				
1976				
1977				
1978				
1979	5.9	1.8	5.6	1.6
1980	5.5	1.7	4.9	2.0
1981	4.8	1.7	4.7	1.6
1982	5.0	1.8	4.9	1.7

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Mountain Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Mountain Lake - 1982 South
7. North - 1982

Since 1979, there has been no noticeable change in water quality in Mountain Lake. The degree of water transparency has been consistently high and densities of suspended algae have remained low.

We hope that participation in this programme continues in 1983.

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Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Muldrew Lake

Muskoka, Wood & Morrison Wards

Town of Gravenhurst

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Muldrew Lake In 1982

Station	North Lake		Miramichi		North End	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 11	3.15	5.4	3.15	13.9	5.5	3.7
July 18	3.2	2.4	2.8	1.6	- -	- -
Aug. 4	- -	- -	- -	- -	3.6	1.6
Aug. 15	3.0	3.1	3.0	2.3	2.75	4.7
Aug. 22	3.1	3.5	3.6	3.6	- -	- -
Aug. 31	3.5	3.9	3.6	5.0	- -	- -
Sept. 7	4.15	2.6	3.9	2.4	- -	- -
	3.4	3.5	3.3	4.8	4.0	3.3

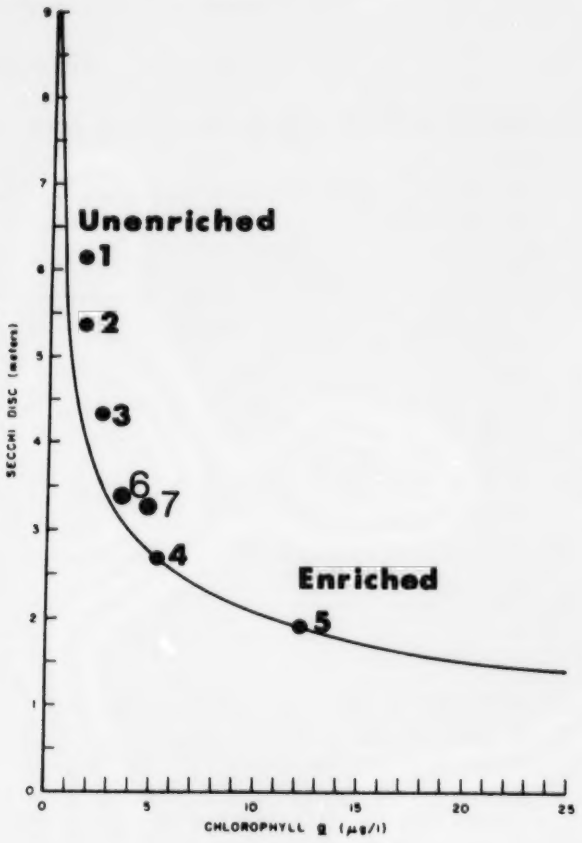
In 1982, Secchi disc readings ranged from 2.8 to 5.5 m and chlorophyll a concentrations ranged from 1.6 to 13.9 ug/L. The highest densities of suspended algae were observed at the Miramichi station on July 11. This increased the seasonal average chlorophyll a concentration considerably. Based on the seasonal averages, Muldrew Lake would be considered moderately enriched with periodic algae blooms.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Muldrew Lake from 1977 to 1982

Station	North Lake		Miramichi		North End	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972						
1973						
1974						
1975						
1976	3.9*	2.9*				
1977	3.7	- -				
1978	3.0*	1.9*				
1979	2.7	5.0				
1980	3.5	4.0	3.1*	3.8*		
1981	3.4	5.9	3.4	4.6	4.2	5.3
1982	3.4	3.5	3.3	4.8	4.0*	3.3*

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Muldrew Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Muldrew Lake - 1982 North Lake
7. Miramichi - 1982

Since 1976, Muldrew Lake's average Secchi disc readings have remained relatively constant. There has been some fluctuation in the average chlorophyll a concentrations depending on whether or not the algae bloomed during the sampling period.

We hope that participation in this programme continues in 1983.

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Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Muskoka Bay

Muskoka Ward

Town of Gravenhurst

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Muskoka Bay in 1982

Station	Parkers Point		Cliff Rock		Center Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 6	3.5	3.1	3.0	3.0	3.5	4.0
Aug. 2	4.3	3.7	4.6	5.0	4.8	5.2
Sept. 8	3.1	2.7	3.4	2.6	3.5	3.2
Oct. 11	4.0	4.4	4.9	3.9	4.4	4.5
	3.7	3.5	4.0	3.6	4.1	4.2

In 1982, Secchi disc readings ranged from 3.0 to 4.9 m and chlorophyll a concentrations ranged from 2.6 to 5.0 ug/L at the stations sampled. Water quality was similar at all 3 stations. Based on the information available, Muskoka Bay would be considered moderately enriched, characterized by a moderate degree of water transparency and moderately high densities of suspended algae.

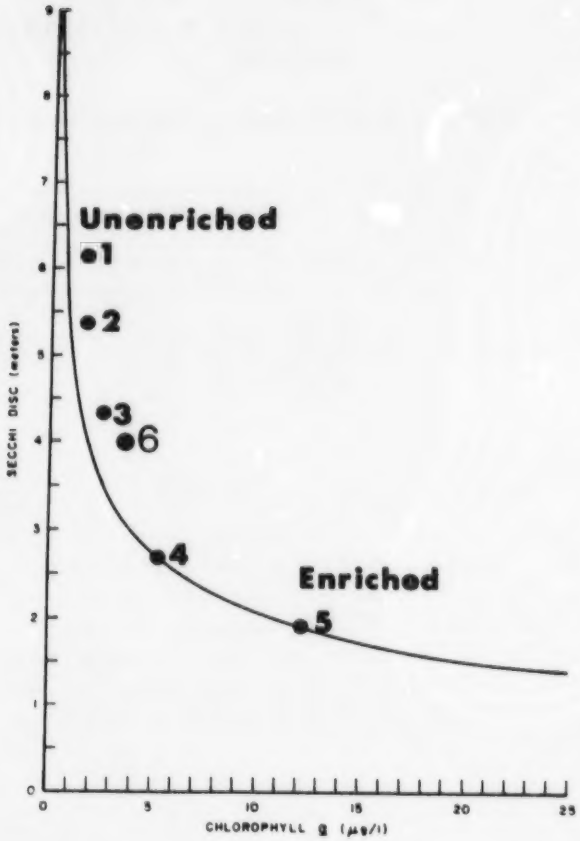
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Muskoka Bay from 1971 to 1982

Station	1 Parker's Point		2 Cliff Rock		3 Centre Bay	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971	1.9*	13.8*				
1972	3.1*	8.1*				
1973	3.2*	6.9*				
1974	2.7*	5.0*				
1975	3.9*	5.0*				
1976	3.7*	10.6*				
1977 **	4.3(4.2*)	- -	4.1**	- -		
1978	4.8(4.2*)	2.5 (3.5*)	4.8	2.3		
1979 **	5.3(3.3*)	2.6**(6.1*)	4.8**	3.9**		
1980	2.2(2.6*)	9.0(10.3*)	2.0	6.8	3.7	9.3
1981	3.2	3.2	3.6	3.3	3.6	2.9
1982	3.7**	3.5**	4.0**	3.6**	4.1**	4.2**

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Muskoka Bay and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Muskoka Bay - 1982 Cliff Rock

Since 1971, periodic algae blooms in Muskoka Bay have resulted in a great deal of fluctuation in the average chlorophyll a concentrations and, to a lesser extent average Secchi disc readings. In the past two years, there have been no major algae blooms.

We hope that participation in this programme continues in 1983.

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Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Nine Mile Lake

Wood Ward

Township of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Nine Mile Lake in 1982

Station	Southeast	
Date	S.D.	Chl.a
May 24	3.0	3.2
May 30	2.9	3.5
June 13	2.8	3.5
June 20	2.4	5.1
July 4	2.3	4.3
July 11	2.3	5.4
July 18	2.7	3.2
July 25	2.8	2.1
Aug. 1	2.8	2.6
Aug. 7	3.1	1.4
Aug. 14	3.0	1.6
Aug. 21	3.0	2.5
Sept. 18	2.9	1.3
	2.8	3.1

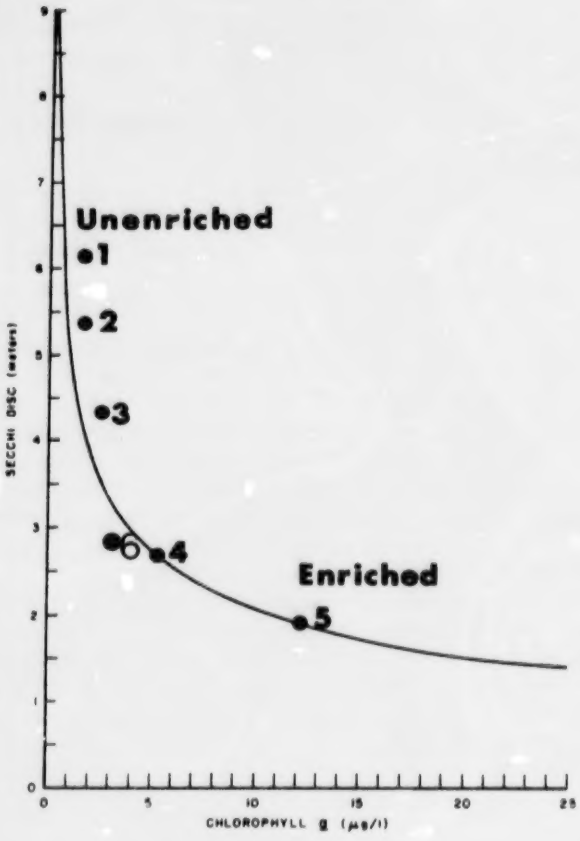
An excellent sampling program was conducted on Nine Mile Lake in 1982. Secchi disc readings ranged from 2.3 to 3.1 m and chlorophyll a concentrations ranged from 1.3 to 5.4 ug/L. The highest densities of suspended algae were observed in late June and early July. This corresponded to the period with the lowest degree of water transparency. Based on the seasonal averages, Nine Mile Lake would be considered moderately enriched. The low degree of water transparency was due partly to algae and partly to the noticeable brown colouration of the water. The densities of suspended algae were moderately low.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Nine Mile Lake from 1979 to 1982

Station	Main		Southeast	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973				
1974				
1975				
1976				
1977				
1978				
1979	2.9	5.0	- -	- -
1980	2.7	3.8	2.3	3.7
1981	*2.8 (2.4**)	*1.7 (2.7**)	3.0	2.7
1982	- -	- -	2.8	3.1

*Based on less than 6 samples
** MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Nine Mile Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Nine Mile Lake - 1982

Since 1979, average chlorophyll a concentrations have decreased from 5.0 ug/L in 1979 to 2.7 ug/L in 1981 at the main station. Average Secchi disc readings at that station have not changed significantly. At the Southeast station, there have been no noticeable changes in water quality.

We hope that participation in this programme continues in 1983.

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Percy Lake

Harburn Twp.

Provincial County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Percy Lake in 1982

Station	Main	
Date	S.D.	Chl.a
June 13	3.75	1.5
June 28	3.75	2.3
July 5	3.5	2.4
July 18	3.0	2.4
July 26	3.25	4.6
Aug. 8	3.0	4.1
Aug. 15	3.25	3.3
Sept. 7	3.25	4.5
	3.3	3.1

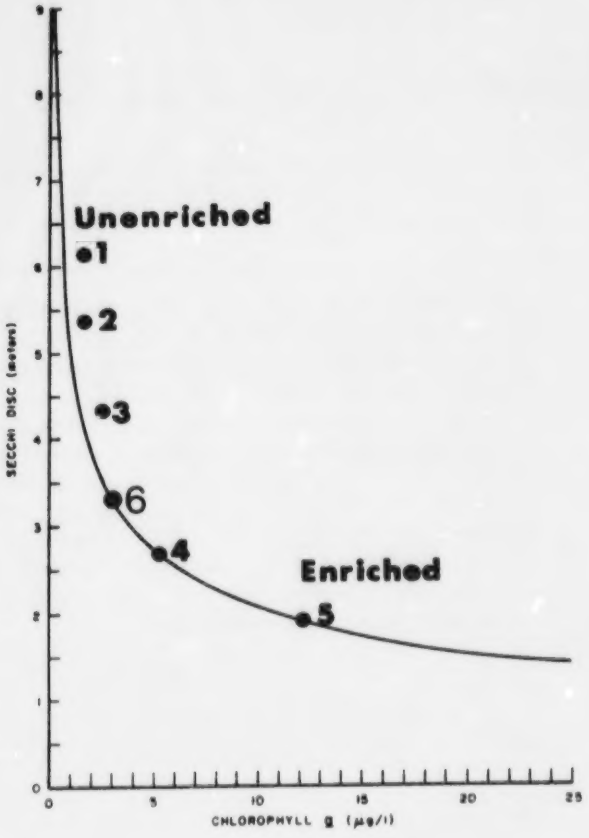
In 1982, the Secchi disc readings have ranged from 3.0 to 3.75 m and chlorophyll a concentrations have ranged from 1.5 to 4.6 ug/L. Based on the seasonal averages, Percy Lake would be considered moderately enriched, characterized by a moderate degree of water transparency and moderate densities of suspended algae. Percy Lake has a natural brown colouration which decreases the degree of water transparency somewhat.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Percy Lake from 1977 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977	5.1*	- -
1978	4.1	2.2
1979	4.4	2.1
1980	3.3	3.3
1981	4.1	2.5
1982	3.3	3.1

* MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Percy Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Percy Lake - 1982

Since 1977, the average Secchi disc readings have decreased from 5.5 to 3.3 m and average chlorophyll a concentrations have increased from 2.2 to 3.1 ug/L.

We recommend continued participation in this programme in order to determine whether this indicates a long-term change in water quality.

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Pine Lake

Muskoka and Wood Wards

Town of Gravenhurst

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Pine Lake from 1982

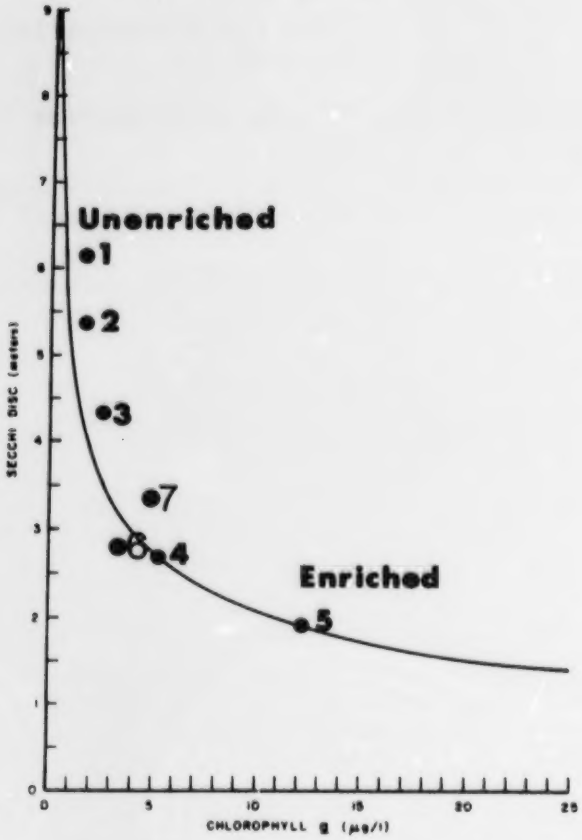
Station	Upper 1st		Lower 2nd	
Date	S.D.	Chl.a	S.D.	Chl.a
July 4	2.1	2.7	3.25	4.8
July 25	2.75	4.4	3.5	3.9
Aug. 15	3.6	2.6	3.8	7.1
Aug. 29	2.4	3.8	2.8	4.3
Sept.19	3.4	2.9	3.5	3.1
Oct. 11	2.8	3.7	2.8	5.8
	2.8	3.4	3.3	4.8

In 1982 Secchi disc readings ranged from 2.1 to 3.8 m and chlorophyll a concentrations ranged from 2.7 to 7.1 ug/L. Higher densities of suspended algae were observed at the lower 2nd lake station. Based on the seasonal averages, Pine Lake would be considered moderately enriched, characterized by periodic algae blooms, a moderately low degree of water transparency and moderately high densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Pine Lake from 1979 to 1982

Station	Upper 1st Lake		Lower 2nd Lake	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973				
1974				
1975				
1976				
1977				
1978				
1979	3.4	2.8	3.4	3.2
1980	2.9	5.1	3.0	4.8
1981	2.9	3.4	3.0	2.9
1982	2.8	3.4	3.3	4.8

Figure 1: The relationship between Secchi disc and chlorophyll a for Pine Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Pine Lake - 1982 Upper 1st
7. Lower 2nd-1982

Since 1979, the average Secchi disc readings have remained relatively constant while average chlorophyll a concentrations have fluctuated from year to year. This is due to the periodically high densities of suspended algae experienced in some years.

We hope that participation in this programme continues in 1983.

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Pine Lake

Oakley Ward

Town of Bracebridge

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Pine Lake in 1982

Station	Centre		N.W.Bay		S.E. Bay		N.E. Bay		S.W. Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
June 27	- -	- -	- -	- -	- -	- -	4.0	1.8	3.5	1.3
July 11	- -	- -	3.5	1.8	3.25	0.9	- -	- -	- -	- -
July 26	- -	- -	5.5	1.2	4.5	1.3	- -	- -	- -	- -
Aug. 29	4.0	1.3	- -	- -	5.0	1.4	4.5	1.5	4.0	1.8
Sept. 4	- -	- -	4.5	1.3	4.0	1.2	- -	- -	- -	- -
	4.0	1.3	4.5	1.4	4.2	1.2	4.2	1.6	3.8	1.6

Insufficient sampling was done at any one station to get a reliable seasonal average. Based on the information available, Pine Lake would be considered unenriched, characterized by a moderately high degree of water transparency and low densities of suspended algae. There is a natural brown colouration in Pine Lake which reduces water transparency somewhat.

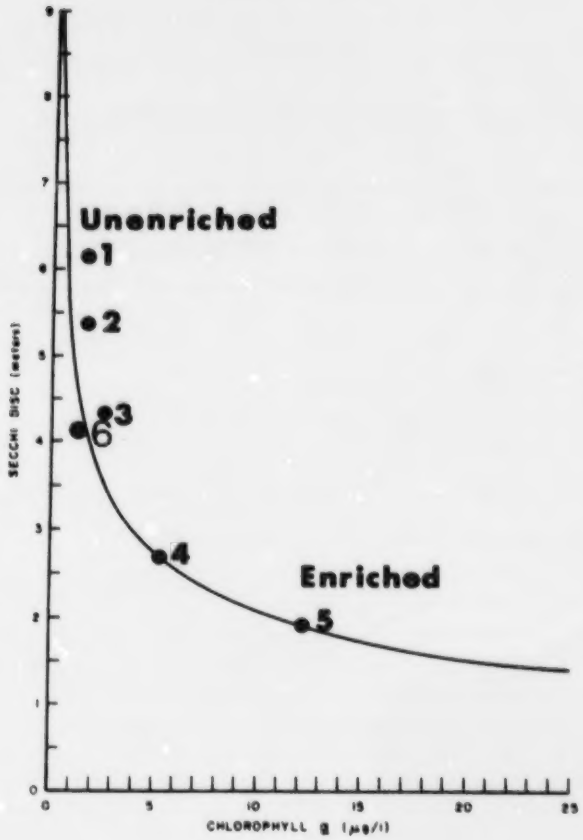
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Pine Lake from 1974 to 1982

Station	Main		N.W.Bay		S.E.Bay		N.E.Bay		S.W.Bay	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971										
1972										
1973										
1974	5.0	1.5								
1975	5.7	1.8								
1976	- -	- -								
1977	5.0	- -								
1978	- -	- -								
1979	4.4* (4.4**)	2.1* (2.4**)								
1980	4.7	3.1								
1981	4.5*	2.1*								
1982	4.0*	1.3*	4.5*	1.4*	4.2*	1.2*	4.2*	1.6*	3.8*	1.6*

* Based on less than 6 samples

** MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Pine Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Pine Lake - 1982
   S.E. Bay

Since 1974, there has been no noticeable change in water quality in Pine Lake. The average Secchi disc readings have ranged from 4.0 to 5.7 m and average chlorophyll a concentrations have ranged from 1.3 to 3.1 ug/L. Pine Lake water quality continues to be very good for recreational use.

We hope that participation in this programme continues in 1983.

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Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

Ril Lake

Ridout Ward

Township of Lake of Bays
District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Ril Lake in 1982

Station	1	
Date	S.D.	Chl.a
June 23	2.25	2.3
July 7	2.5	1.6
July 21	3.0	2.1
Aug. 4	2.75	3.3
Aug. 17	2.75	3.5
Sept. 1	2.75	4.6
	2.7	2.9

In 1982, the Secchi disc readings ranged from 2.25 to 3.0 m and chlorophyll a concentrations ranged from 1.6 to 4.6 ug/L. Ril Lake has a noticeable brown colouration due to humic substances in its watershed. This colour reduces the water transparency.

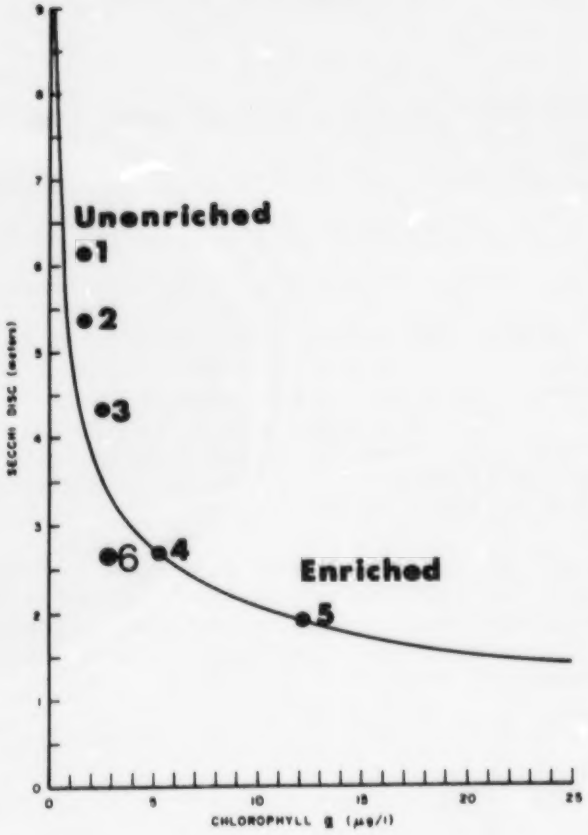
Based on the seasonal averages Ril Lake would be considered moderately enriched, characterized by a low degree of water transparency and moderate densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Ril Lake from 1972 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972	2.5*	4.3*
1973		
1974		
1975		
1976	3.3	3.9
1977	3.0	- -
1978	3.1	3.8
1979	2.5	5.1
1980	2.5	4.5
1981	2.9	5.8
1982	2.7	2.9

* MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Ril Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Ril Lake - 1982

Since 1972, the average Secchi disc readings have remained relatively constant ranging from 2.5 to 3.3 m. Average chlorophyll a concentrations have fluctuated from year to year, ranging from 5.1 ug/L in 1979 to 2.9 ug/L in 1982. The densities of suspended algae depend largely on available nutrients and weather conditions in any particular year.

We hope that participation in this programme continues in 1983.

For additional copies of this report, please contact:

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Round Lake

Belmont Township

Peterborough County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Round Lake in 1982

Station	Main		South West End		North West End	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
July 12	3.5	5.6	- -	- -	- -	- -
Aug. 30	- -	- -	2.0	12.4	2.0	9.9
Sept.19	3.0	4.3	- -	- -	- -	- -
	3.2	5.0	2.0	12.4	2.0	9.9

Insufficient samples were taken to allow meaningful conclusions to be made. It is recommended that at least six samples be taken throughout the ice free period in order to get a reliable seasonal mean.

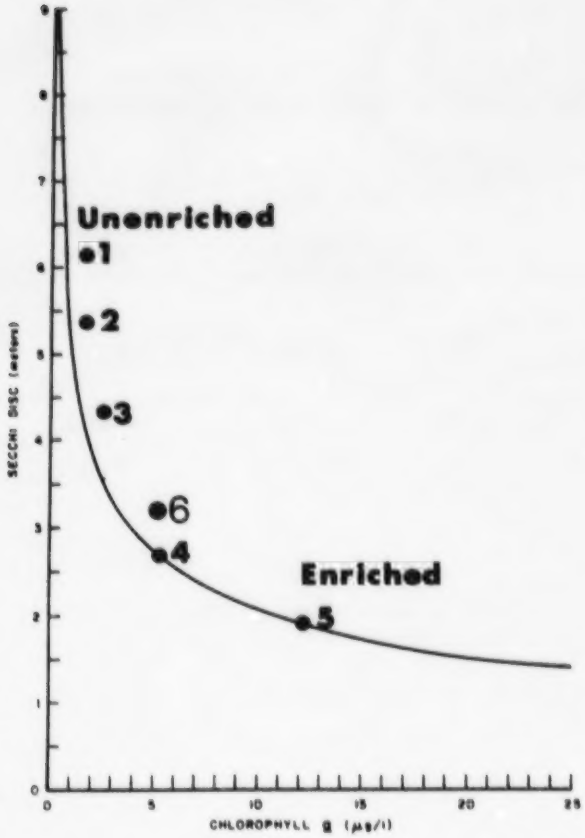
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Round Lake from 1977 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977	2.9	- -
1978	3.3 (4.0*)	2.5 (2.6*)
1979	3.8	2.8
1980	- -	- -
1981	3.5**	4.8**
1982	3.2**	5.0**

* MOE survey

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Round Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Round Lake - 1982

If participation in this program is to be continued, the sampling frequency must be increased.

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Salerno Lake

Snowdon & Glamorgan Townships

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Salerno Lake in 1982

Station	South		North	
Date	S.D.	Chl.a	S.D.	Chl.a
June 13	2.5	2.5	4.2	1.2
June 20	3.0	2.4	3.0	5.4
July 11	4.5	5.6	4.0	2.2
July 25	4.5	2.8	5.0	3.3
Aug. 8	5.0	3.9	3.5	5.0
Aug. 15	3.5	5.0	4.0	6.9
Sept. 5	3.5	2.9	- -	- -
	3.8	3.6	4.0	4.0

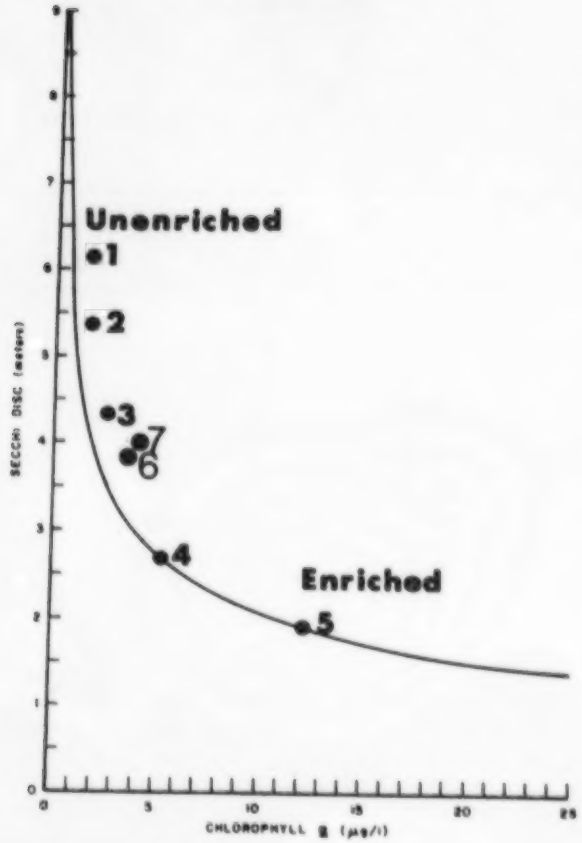
In 1982, water quality observed at both stations was similar. Secchi disc readings ranged from 2.5 to 5.0 m and chlorophyll a concentrations ranged from 1.2 to 6.9 ug/L.
Based on the seasonal averages, Salerno Lake would be considered moderately enriched, characterized by a moderate degree of water transparency and moderately high densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Salerno Lake from 1973 to 1982

Station	A South		B North	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973	6.0*	1.9*		
1974	- -	- -		
1975	3.6	4.0	4.5	2.2
1976	3.6	3.0	3.9	2.6
1977	4.1	- -	4.4	- -
1978	4.0**	3.7**	4.3**	3.0**
1979	5.0**	3.7**	5.0**	3.7**
1980	4.2	3.8	4.4	4.8
1981	4.5	4.7	5.2	3.7
1982	3.8	3.6	4.0	4.0

* Mean of 3 stations
** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Salerno Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Salerno Lake - 1982 South
7. North - 1982

Since 1973, average Secchi disc readings have fluctuated from 3.6 to 6.0 m. Average chlorophyll a concentrations have generally increased from 2.0 ug/L in 1973 to 4.7 ug/L in 1981 at the South Station. There has been no noticeable change in water quality since 1975.

We recommend that participation in this programme continue in order to monitor long-term changes in water quality.

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Shadow Lake

Somerville Township

Victoria County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Shadow Lake in 1982

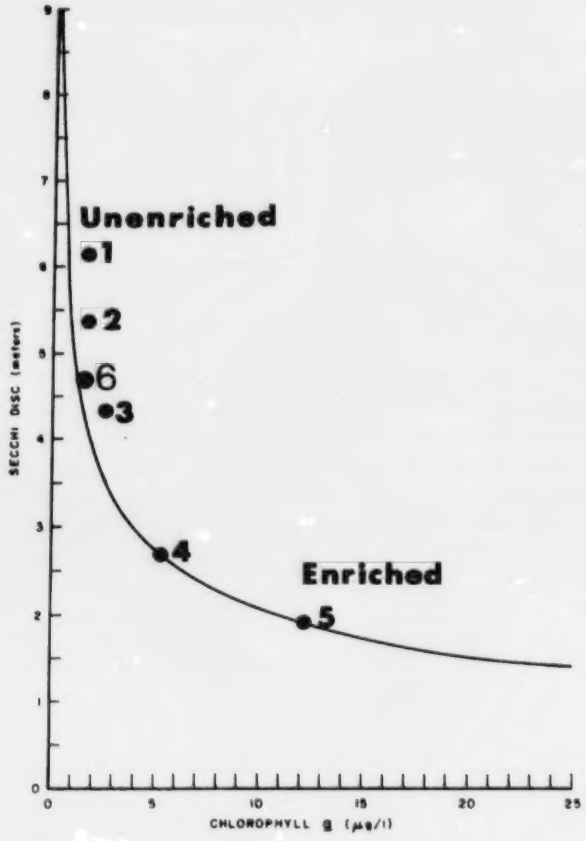
Station	Mid Lake	
Date	S.D.	Chl.a
May 24	4.50	2.2
July 4	5.0	1.1
July 12	4.25	1.1
July 18	4.5	0.8
July 25	5.50	0.7
Aug. 3	5.00	1.0
Aug. 8	5.25	1.4
Aug. 14	4.25	1.2
Aug. 22	5.00	1.4
Aug. 29	4.75	1.7
Sept. 6	4.0	1.8
	4.7	1.3

Another fine sampling program was carried out during 1982. Values for both parameters shown in Table 1. fluctuated slightly with no apparent trend over the sampling period. Based on the mean values Shadow Lake was considered unenriched with low algal densities and relatively good water clarity.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Shadow Lake from 1972 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972	6.0	1.0
1973	5.0	0.7
1974	5.0	1.0
1975	- -	- -
1976	- -	- -
1977	4.3	- -
1978	4.8	1.8
1979	4.9	2.3
1980	4.8	1.8
1981	4.5	2.2
1982	4.7	1.3

Figure 1: The relationship between Secchi disc and chlorophyll a for Shadow Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Shadow Lake - 1982

The long term water clarity of Shadow Lake appears to be fluctuating about a nine year mean of 4.9 m. The corresponding long term mean algal density was 1.5 ug/L. A slight decrease in mean algal density was noted in the 1982 results but this may be due simply to year to year fluctuations. Continued participation in the programme is recommended to follow long term trends in enrichment status.

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Six Mile Lake

Baxter Ward

Town of Georgian Bay

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Six Mile Lake in 1982

Station	North		South	
Date	S.D.	Chl.a	S.D.	Chl.a
June 20	3.0	5.2	2.9	5.3
July 5	3.5	2.8	3.0	2.6
July 12	3.5	2.3	3.5	2.8
July 26	3.75	4.1	3.5	2.8
Sept. 7	5.0	2.1	4.5	2.0
	3.8	3.3	3.5	3.1

In 1982, Secchi disc readings ranged from 2.9 to 5.0 m and chlorophyll a concentrations ranged from 2.0 to 5.3 ug/L. Based on the information available, Six Mile Lake would be considered moderately enriched, characterized by a moderate degree of water transparency and moderate densities of suspended algae.

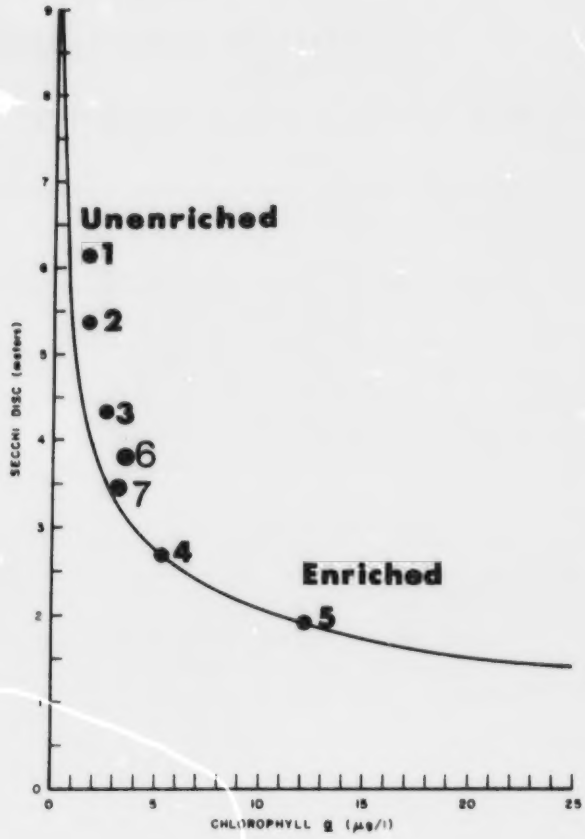
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Six Mile Lake from 1977 to 1982

Station	North (Crooked Bay)		South (Lost Channel)		Main Basin	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972						
1973						
1974						
1975						
1976						
1977	4.1	- -	4.1	- -		
1978	4.1	2.4	3.8	2.9		
1979	5.6	2.2	5.5	2.4		
1980	4.4	2.5	3.4	3.7		
1981	4.6	2.5	4.1	2.9	4.2*	2.0*
1982	3.8**	3.3**	3.5**	3.1**		

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Six Mile Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Six Mile Lake - 1982 North
7. South - 1982

Since 1977, there has been no noticeable change in water quality in Six Mile Lake. Because of the moderately enriched nature of the lake, water transparency and suspended algae fluctuate from year to year depending on suitability of weather conditions for growth of algae.

We hope that participation in this programme continues in 1983.

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Skeleton Lake

Cardwell, Stisted, Stephenson and Watt Wards

Township of Muskoka Lakes

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Skeleton Lake in 1982

Station	Middle North Shore		
Date	S.D.	Chl.a	
June 15	9.0	0.9	In 1982, Secchi disc readings ranged
June 27	10.0	0.6	from 9.0 to 11.0 m and chlorophyll a
July 4	11.0	0.6	concentrations ranged from 0.6 to
July 11	10.5	0.9	1.6 ug/L.
July 18	10.0	0.9	
Aug. 2	9.0	1.3	Based on the seasonal averages,
Aug. 15	10.0	1.6	Skeleton Lake would be considered
Aug. 29	9.0	1.0	unenriched.
	9.8	1.0	Skeleton Lake has an extremely high degree of water transparency and low densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Skeleton Lake from 1980 to 1982

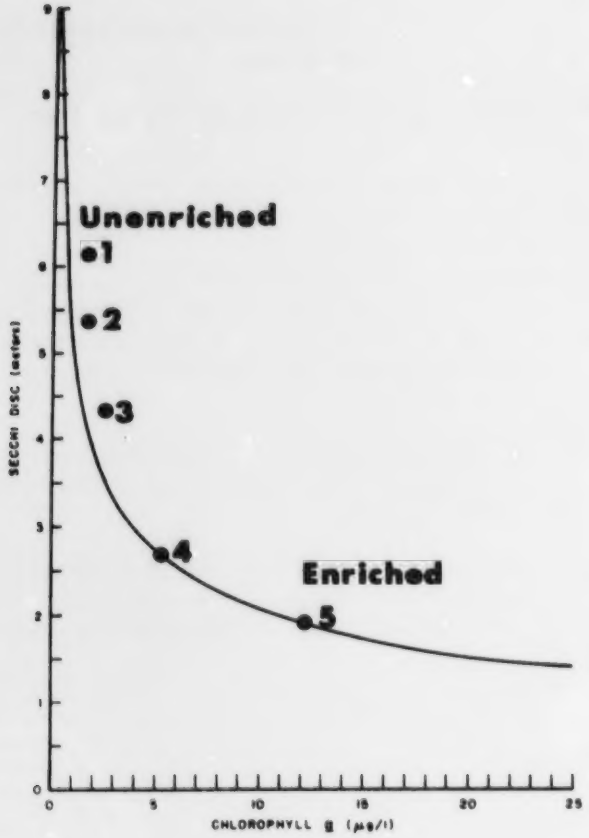
Station	Middle (North Shore)		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a
1971				
1972				
1973				
1974				
1975				
1976				
1977				
1978				
1979				
1980	9.5**	1.1**		
1981	10.3**	1.2**	8.0*	0.8*
1982	9.8	1.0		

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Skeleton Lake and a number of recreational lakes in the province. All data are seasonal means.

●6



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Skeleton Lake - 1982

Since 1980, there has been no noticeable change in water quality in Skeleton Lake. Water quality remains excellent for recreational use.

We hope that participation in this programme continues in 1983.

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Soyers Lake

Minden Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Soyers Lake in 1982

Station	1	
Date	S.D.	Chl.a
May 24	5.5	1.3
July 4	4.9	1.7
July 18	3.7	2.1
Aug. 2	4.0	2.8
Aug. 8	4.1	3.2
Aug. 22	3.7	2.1
Aug. 29	3.8	3.8
Sept. 6	4.0	2.6
	4.2	2.4

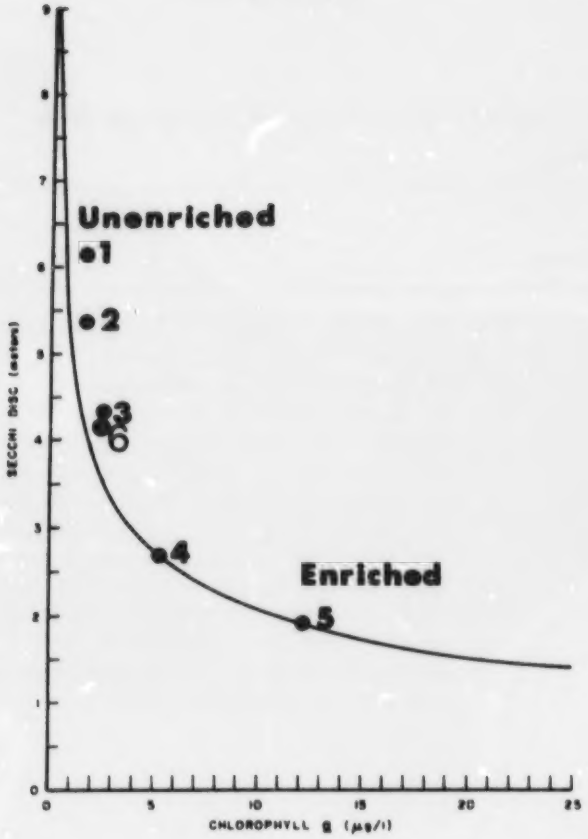
In 1982, Secchi disc readings ranged from 3.7 to 4.9 m and chlorophyll a concentrations ranged from 1.3 to 3.8 ug/L. Based on the seasonal averages Soyers Lake would be considered moderately enriched, characterized by a moderately high degree of water transparency and moderately low densities of suspended algae. The degree of water transparency was somewhat reduced due to the natural brown colouration of the water in Soyers Lake.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Soyers Lake from 1973 to 1982

Station	1	
Year	S.D.	Chl.a
1971		
1972		
1973	3.8	1.7
1974	4.4*	0.9*
1975	3.5	2.1
1976	4.3	1.7
1977	5.0	- -
1978	5.2	1.8*
1979	4.5	2.2
1980	4.1	2.6
1981	4.7	2.1
1982	4.2	2.4

* Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Soyers Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Soyers Lake - 1982

Since 1973, there has been no noticeable change in water quality in Soyers Lake. Average Secchi disc readings have ranged from 3.5 to 5.2 m and average chlorophyll a concentrations have ranged from 1.7 to 2.6 ug/L.

We hope that participation in this programme continues in 1983.

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Sparrow Lake

Morrison Ward

Town of Gravenhurst

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Sparrow Lake in 1982

Station	Off Delmonte		South End		Deep Bay	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
May 30	2.5	1.3	2.5	1.1	5.25	0.4
June 12	5.25	2.6	2.25	1.9	3.75	1.2
June 28	2.0	2.4	2.0	2.1	3.25	2.5
July 11	1.75	2.5	2.0	2.4	2.75	2.5
July 24	3.0	1.7	2.75	1.3	5.75	2.8
Aug. 2	2.5	2.7	2.5	2.4	--	--
Aug. 15	2.5	3.7	2.5	2.6	4.0	4.0
Sept. 5	2.5	2.0	2.5	1.3	3.5	1.3
Sept.19	4.0	1.3	4.25	1.4	4.25	2.2
	2.9	2.2	2.6	1.8	4.1	2.1

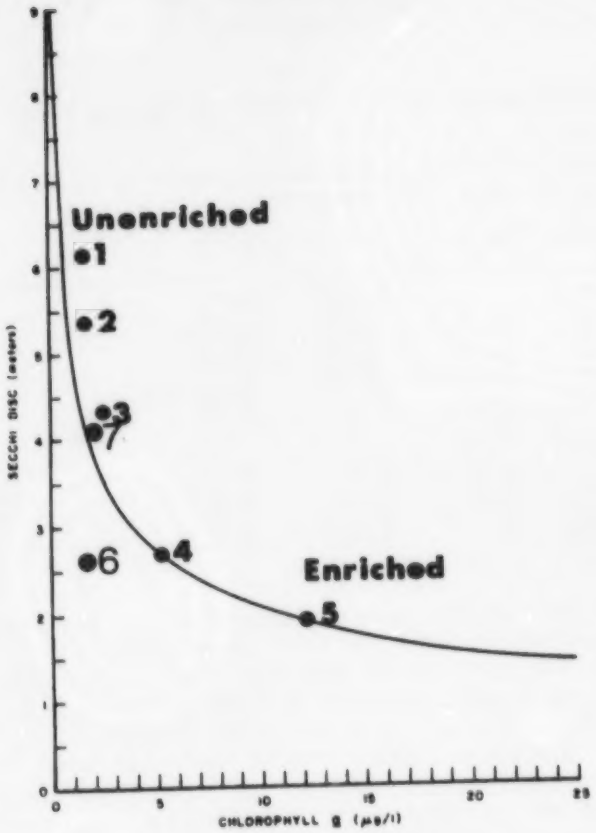
In 1982, the highest degree of water transparency was observed at Deep Bay station. At the south end of the lake and off Delmonte, water quality was similar with Secchi disc readings ranging from 1.75 to 5.25 m and chlorophyll a concentrations ranging from 1.1 to 3.7 ug/L. There is a natural brown colouration of the water in Sparrow Lake. This reduces the degree of water transparency somewhat. Based on the seasonal averages, Sparrow Lake would be considered moderately enriched, characterized by a low degree of water transparency (except at Deep Bay) and moderately low densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Sparrow Lake

Station	Off Delmonte		South End		Deep Bay		Main Basin	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971								
1972								
1973								
1974								
1975								
1976								
1977								
1978								
1979								
1980								
1981	2.8	3.0	3.1	2.2			3.3*	3.0*
1982	2.9	2.2	2.6	1.8	4.1	2.1		

* MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Sparrow Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Sparrow Lake - 1982 South End
7. Deep Bay - 1982

There has been no noticeable change in water quality of Sparrow Lake since 1981.

We recommend that participation in this programme continues for a number of years in order to establish a long-term water quality record.

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Spring Lake

Draper Ward

Town of Bracebridge

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Spring Lake in 1982

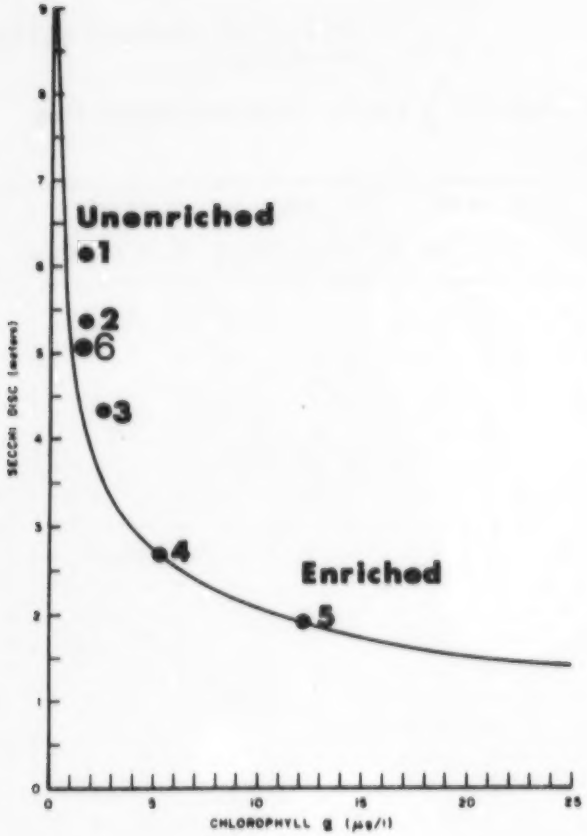
Station	Centre		S. East		S. West		N. East		N. West	
Date	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
May 24	4.5	1.5	- -	- -	- -	- -	- -	- -	- -	- -
May 30	4.5	1.6	4.5	2.3	- -	- -	- -	- -	- -	- -
June 6	3.5	1.7	- -	- -	- -	- -	- -	- -	- -	- -
June 13	- -	- -	2.0	1.8	1.5	2.1	- -	- -	- -	- -
June 21	- -	- -	- -	- -	3.0	3.1	- -	- -	- -	- -
June 27	- -	- -	- -	- -	- -	- -	2.5	2.6	- -	- -
July 4	4.2	1.4	- -	- -	- -	- -	- -	- -	- -	- -
July 18	3.0	1.1	- -	- -	- -	- -	- -	- -	- -	- -
July 25	5.5	1.4	- -	- -	- -	- -	- -	- -	- -	- -
Aug. 9	5.25	1.6	- -	- -	- -	- -	- -	- -	- -	- -
Aug. 15	6.25	1.1	- -	- -	- -	- -	- -	- -	- -	- -
Aug. 22	- -	- -	- -	- -	- -	- -	- -	- -	5.0	1.0
Aug. 29	- -	- -	- -	- -	- -	- -	2.5	1.2	- -	- -
Sept.12	- -	- -	- -	- -	- -	- -	4.0	0.9	- -	- -
Sept.19	8.25	3.0	- -	- -	- -	- -	- -	- -	- -	- -
Oct. 22	5.75	2.9	- -	- -	- -	- -	- -	- -	- -	- -
	5.1	1.7	3.3	2.1	2.3	2.6	3.0	1.6	5.0	1.0

(See Back for Text)

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Spring Lake in 1982

Station	Centre	
Year	S.D.	Chl.a
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978		
1979		
1980		
1982	5.1	1.7

Figure 1: The relationship between Secchi disc and chlorophyll a for Spring Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Spring Lake - 1982

In 1982, centre station was the only one sampled frequently enough to get a reliable seasonal mean. Secchi disc readings ranged from 3.0 to 8.25 m and chlorophyll a concentrations ranged from 1.1 to 3.0 ug/L. At all other stations, the degree of water transparency was considerably lower ranging from 1.5 to 5.0 m. Based on the seasonal averages at Centre Station, Spring Lake would be considered unenriched, characterized by a high degree of water transparency and low densities of suspended algae.

We hope that participation in this programme continues in 1983.

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Sturgeon Lake

Fenelon Township

Victoria County

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Sturgeon Lake in 1982

Station	Off Sturgeon Pt. Foot 2nd St.	
Date	S.D.	Chl.a
June 1	3.5	0.6
June 21	- -	- -
June 27	3.0	7.2
July 3	- -	5.1
July 5	- -	- -
July 18	2.75	2.3
July 19	- -	- -
July 26	3.50	3.9
Aug. 3	- -	- -
Aug. 8	3.5	6.2
Aug. 15	3.0	8.2
Aug. 16	- -	- -
Aug. 29	2.5	7.4
	3.1	5.1

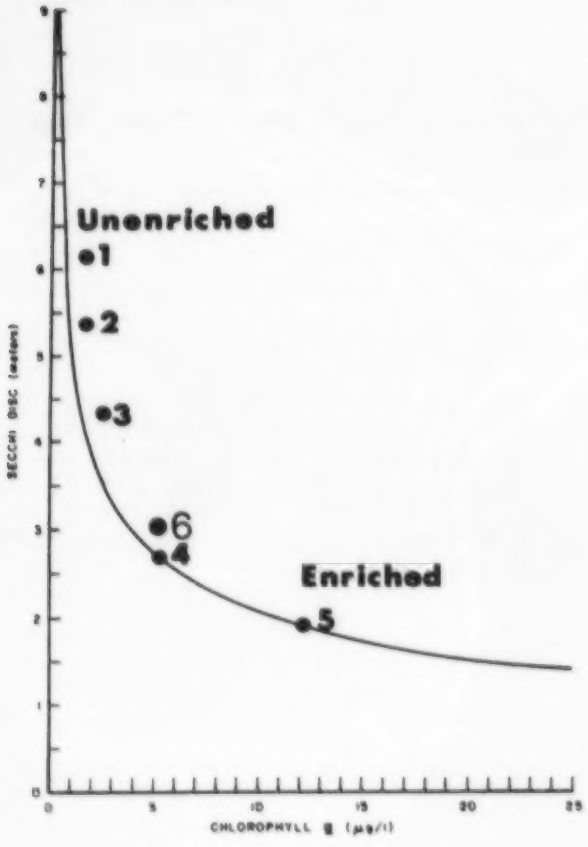
Congratulations on a good effort for the first sampling program carried out on the lake. The values shown in Table 1 fluctuated over the sampling period with no apparent trend. Based on the mean values, Sturgeon Lake off Sturgeon Point is considered enriched with relatively poor water clarity and moderately high algal density.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Sturgeon Lake in 1972, 1976, 1978 & 1982

Station	Off Sturgeon Pt. Foot of 2nd St.	
Year	S.D.	Chl.a
1971		
1972 *	2.3	9.1
1973		
1974		
1975		
1976 *	2.3	8.3
1977		
1978 *	2.2	8.2
1979		
1980		
1981		
1982	3.1	5.1

* MOE data from same approximate location.

Figure 1: The relationship between Secchi disc and chlorophyll a for Sturgeon Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Sturgeon Lake - 1982

Comparing the historical data for Sturgeon Lake with the 1982 results it appears that an improvement in water quality may be taking place. However, data collected during 1982 did not include samples during May, September and October when poorer water clarity and high algal density typically occur. Continued participation in the sampling program is encouraged to determine long term trends in the enrichment status of the lake.

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Sunny Lake

Morrison Ward

Town of Gravenhurst

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Sunny Lake in 1982

Station	Gordon's Cottage		North Bay	
Date	S.D.	Chl.a	S.D.	Chl.a
July 4	4.25	2.7	3.75	2.5
July 18	4.25	2.7	3.75	1.4
Aug. 15	4.25	4.8	3.75	1.4
	4.25	3.4	3.75?	1.8

? Secchi disc could be on bottom of lake

Insufficient sampling was done to obtain a reliable seasonal mean, however, based on the information available, Sunny Lake would be considered unenriched in North Bay but moderately enriched in front of Gordon's cottage. Densities of suspended algae were higher in front of Gordon's cottage than in North Bay. There is a certain amount of natural brown colouration in the water in Sunny Lake which reduces water transparency somewhat.

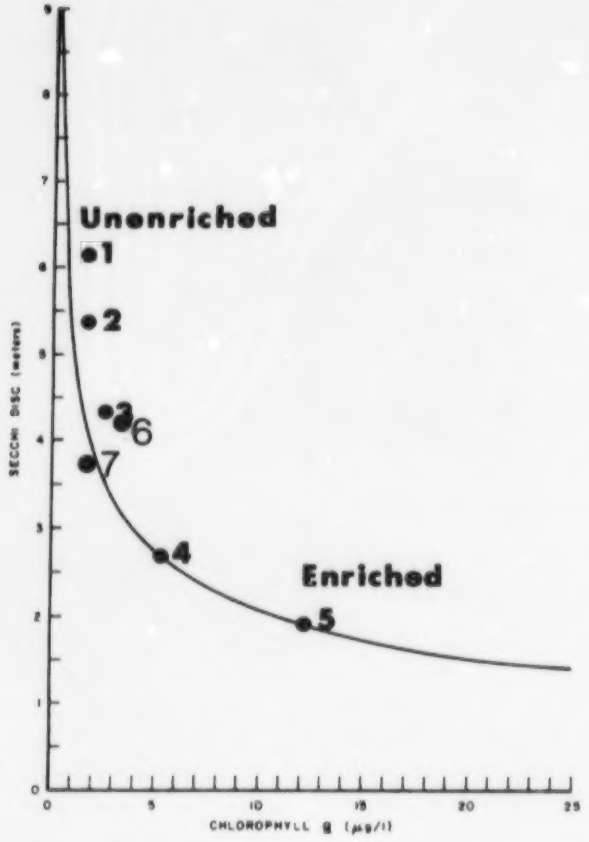
TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Sunny Lake in 1982

Station	Gordon's		North Bay		Main	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972					4.2*	4.6*
1973						
1974						
1975						
1976						
1977						
1978					5.2	4.8
1979			3.8	3.1	4.1	5.4
1980			3.2	5.1	- -	- -
1981			- -	- -		
1982	4.25**	3.4**	3.75**	1.8**		

* MOE data

** Based on less than 6 samples

Figure 1: The relationship between Secchi disc and chlorophyll a for Sunny Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Sunny Lake - 1982
   Gordon's
7. North Bay - 1982

Since MOE's sampling program in 1972, the average Secchi disc readings have not changed noticeably but the average chlorophyll a concentrations are slightly lower in 1982. A sampling program was done by MOE in 1982. We hope to have the results of that programme summarized on next year's report.

We hope that participation in this programme continues in 1983. We recommend that the sampling frequency be increased to six times per season.

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Ontario Ministry of the Environment, Central Region, 150 Ferrand Drive, DON MILLS, Ontario, M3C 3C3, Telephone: (416) 424-3000, Attention: Dhan Sharma

*Based on less than 6 samples

Tasso Lake

Finlayson Ward

Twp. of Lake of Bays

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Tasso Lake in 1982

Station	1st Bay		2nd Bay	
Date	S.D.	Chl.a	S.D.	Chl.a
July 3	6.2	1.4	6.1	1.6
July 19	5.5	1.8	6.0	1.7
Aug. 11	5.0	2.0	6.0	2.5
Sept. 6	5.0	2.5	4.0	2.8
	5.4	1.9	5.5	2.2

In 1982, Secchi disc readings ranged from 4.0 to 6.2 M and chlorophyll a concentrations ranged from 1.4 to 2.8 ug/L. Based on the information available, Tasso Lake would be considered unenriched, characterized by a high degree of water transparency and low densities of suspended algae.

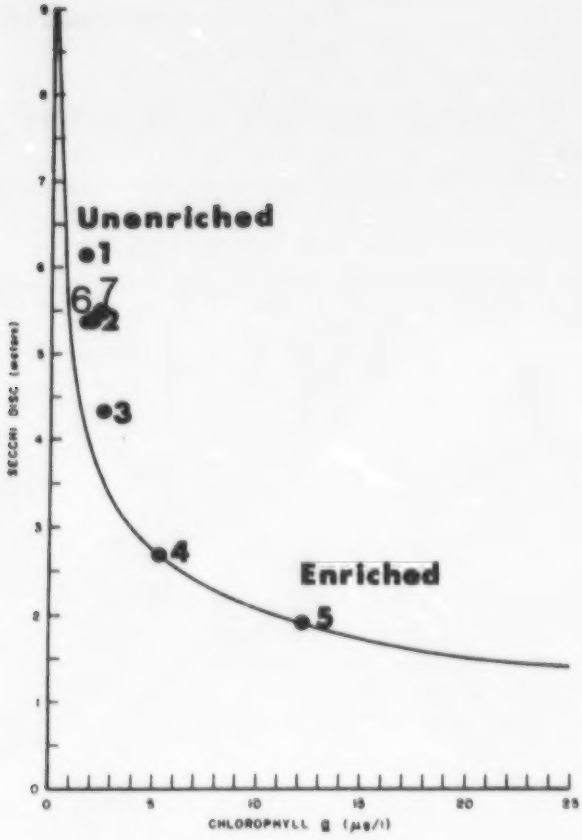
There are no major difficulties in water quality between the two stations sampled.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Tasso Lake from 1980 to 1982

Station	1st Bay South		2nd Bay South		Deep Basin	
Year	S.D.	Chl.a	S.D.	Chl.a	S.D.	Chl.a
1971						
1972						
1973						
1974						
1975						
1976						
1977						
1978						
1979						
1980	6.7*	1.3*	6.4*	2.[illegible]*		
1981	6.4*	1.6*	7.3*	1.6*	5.2**	2.0**
1982	5.4*	1.9*	5.5*	2.2*		

*Based on less than 6 samples
**MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Tasso Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Tasso Lake - 1982
   1st Bay
7. 2nd Bay - 1982

Since 1980, the average Secchi disc readings have decreased but average chlorophyll a concentrations have not increased. It is difficult to compare these values since they are not reliable seasonal means.

We hope that participation in this programme continues in 1983.

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Twelve Mile Lake

Minden Township

Provisional County of Haliburton

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Twelve Mile Lake in 1982

Station	Center	
Date	S.D.	Chl.a
May 13	5.3	1.2
June 27	6.0	1.3
July 25	4.3	2.1
Aug. 8	4.5	2.9
Aug. 15	5.0	2.7
Aug. 22	4.5	2.3
Aug. 29	4.5	2.1
	4.9	2.1

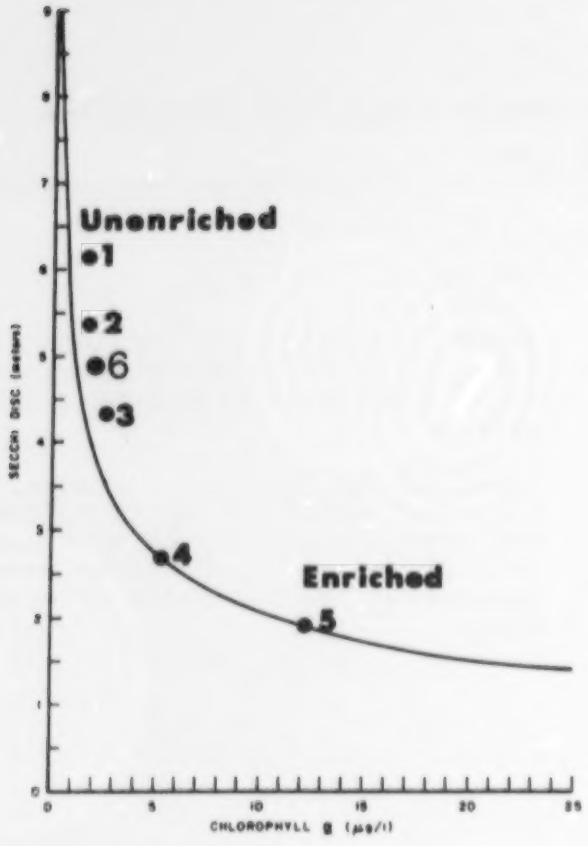
In 1982, Secchi disc readings ranged from 4.3 to 6.0 m and chlorophyll a concentrations ranged from 1.2 to 2.9 ug/L.

Based on the seasonal averages, Twelve Mile Lake would be considered moderately enriched, characterized by a moderately high degree of water transparency and moderately low densities of suspended algae.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Twelve Mile Lake from 1972 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972	5.8	1.2
1973	6.3	1.8
1974	6.0	1.0
1975	6.9	2.5
1976	6.5	1.7
1977	6.5	- -
1978	- -	- -
1979	- -	- -
1980	5.0	2.2
1981	5.5	3.1
1982	4.9	2.1

Figure 1: The relationship between Secchi disc and chlorophyll a for Twelve Mile Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Twelve Mile Lake - 1982

Since 1972, the average Secchi disc readings have tended to decrease and average chlorophyll a concentrations have tended to increase. The amount of change has not produced a noticeable change in water quality, however, we recommend that participation in this programme be continued to monitor any long-term water quality changes.

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Waseosa Lake

Chaffey Ward

Town of Huntsville

District Municipality of Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Waseosa Lake in 1982

Station	North End	
Date	S.D.	Chl.a
June 6	3.1	1.4
July 5	4.0	3.2
Aug. 9	4.0	3.5
Sept. 6	4.0	3.9
	3.8	3.0

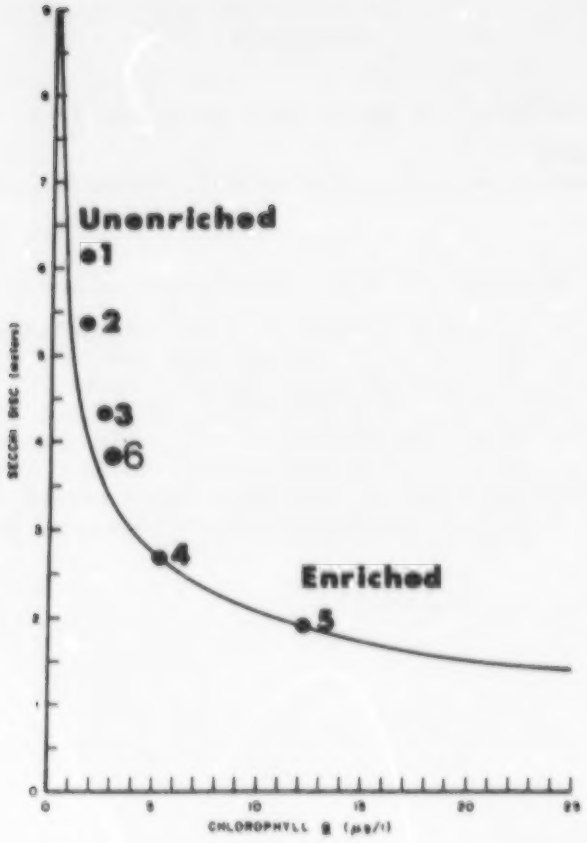
In 1982, Secchi disc readings ranged from 3.1 to 4.0 m and chlorophyll a concentrations ranged from 1.4 to 3.9 ug/L. Insufficient sampling was done to obtain a reliable seasonal mean, however, based on the information available, Waseosa Lake would be considered moderately enriched.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Waseosa Lake from 1971 to 1982

Station	Main	
Year	S.D.	Chl.a
1971		
1972	3.1**	5.7**
1973		
1974	4.2	2.8
1975	4.1(4.3**)	5.2 (3.5**)
1976	- -	- -
1977	5.1	- -
1978	4.8*	2.8*
1979	3.8*	4.4*
1980	3.7	2.6
1981	3.8*	3.4*
1982	3.8*	3.0*

* Based on less than 6 samples
**MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Waseosa Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Waseosa Lake - 1982

Since 1972, there has been some fluctuation in average values, however, no trend in water quality is evident. The degree of water transparency in Waseosa Lake is slightly lower than expected due to natural brown colouration of the water.

We hope that participation in this programme continues in 1983.

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Wood Lake
Oakley Ward
Town of Bracebridge

District Municipality of
Muskoka

TABLE 1: Secchi Disc (m) and chlorophyll a (ug/L) data collected from Wood Lake in 1982

Station	Mid-Lake	
Date	S.D.	Chl.a
July 11	3.5	2.4
July 18	3.5	2.0
July 25	3.5	2.0
Aug. 2	3.4	2.0
Aug. 15	3.7	2.0
Aug. 22	3.7	1.8
	3.6	2.0

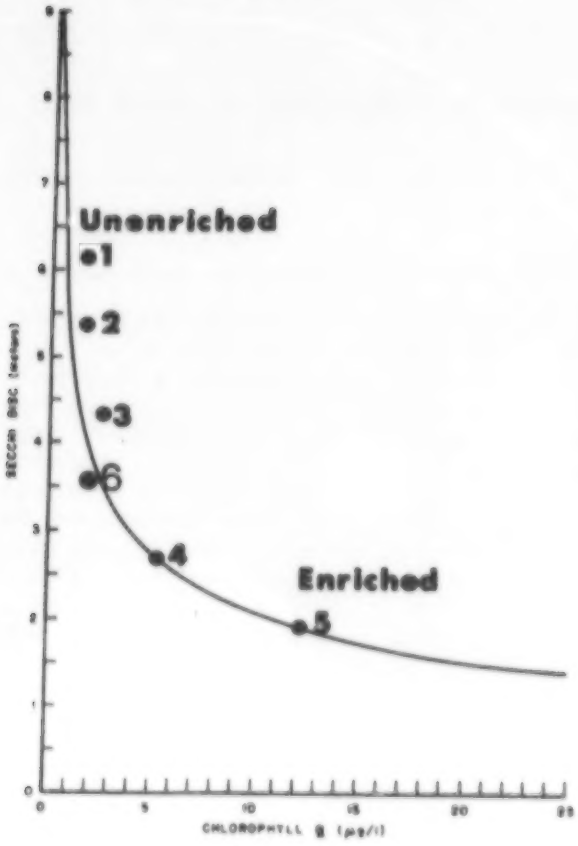
In 1982, Secchi disc readings ranged from 3.4 to 3.7 m and chlorophyll a concentrations ranged from 1.8 to 2.4 ug/L. Based on the seasonal averages, Wood Lake would be considered moderately enriched, characterized by a moderate degree of water transparency and low densities of suspended algae. The brown colouration of Wood Lake reduces the water transparency somewhat.

TABLE 2: Summary of mean values for Secchi disc (m) and chlorophyll a (ug/L) data collected from Wood Lake from 1972 to 1982

Station	Centre	
Year	S.D.	Chl.a
1971		
1972	3.5**	5.1**
1973	- -	- -
1974	4.5	1.3
1975	4.7	2.9
1976	- -	- -
1977	- -	- -
1978	2.8*	3.0*
1979	4.3	3.6
1980	3.4	3.7
1981	3.5*	1.7*
1982	3.6	2.0

* Based on less than 6 samples
** MOE data

Figure 1: The relationship between Secchi disc and chlorophyll a for Wood Lake and a number of recreational lakes in the province. All data are seasonal means.



1. Lake of Bays - 1979
2. Boshkung Lake - 1979
3. Kennaway Lake - 1979
4. Muldrew Lake - 1979
5. Lake St. John - 1979
6. Wood Lake - 1982

Since 1972, there has been no noticeable change in water quality of Wood Lake. Average Secchi disc readings have ranged from 3.4 to 4.7 m and average chlorophyll a concentrations have ranged from 1.3 to 5.1 ug/L. The highest chlorophyll a concentrations were observed in 1972 but have not recurred since then.

We hope that participation in this programme continues in 1983.

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